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PATENTS

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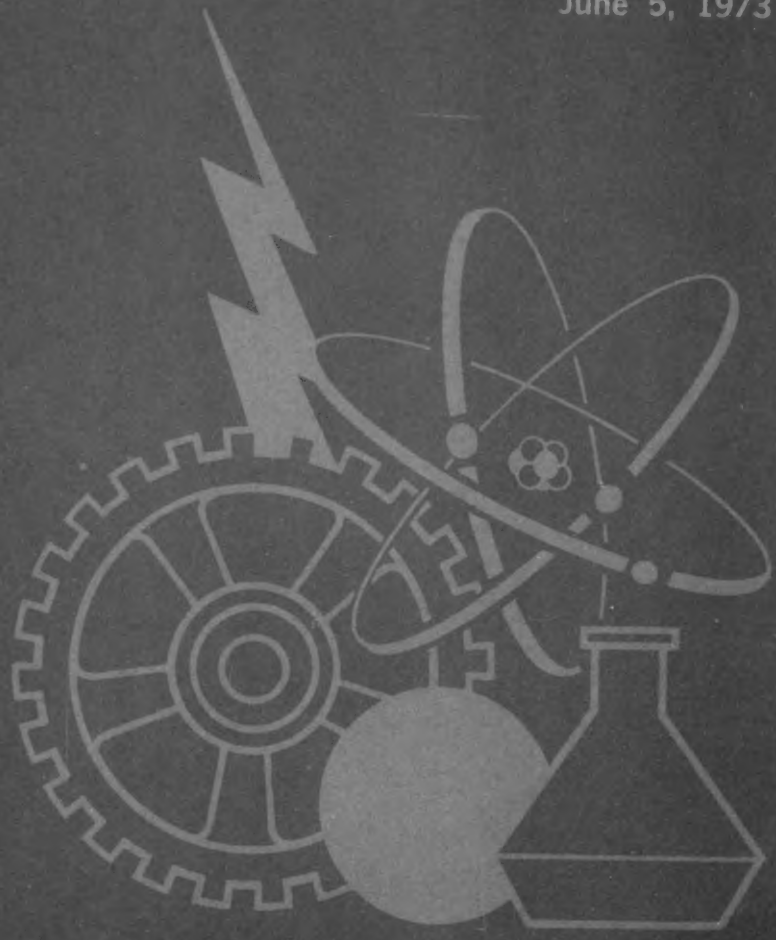

U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

June 5, 1973 Volume 911 Number 1

CONTENTS

	Page
Patents and Trademark Notices	
Board of Appeals Decisions Rendered in the month of April 1973	2
Patent Suits	2
Patent Notices	
Certificates of Correction for the Week of June 5, 1973	3
Classification Order No. 411	3
Patents Withdrawn From Register	3
Patents Available for Licensing or Sale	3
Condition of Patent Applications	6
Defensive Publications	7
Reissue Patents Granted	10
Plant Patents Granted	12
Patents Granted	
General and Mechanical	13
Chemical	188
Electrical	236
Design Patents Granted	334
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications, Reissues, Plants, and Designs	PI 39
Classification of	
Patents (Including Reissues)	PI 43
Designs, Plants, and Defensive Publications	PI 46
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 47
Designs, Plants, and Applicants of Defensive Publications	PI 49

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of April 1973

Examiner affirmed	179
Examiner affirmed in part	15
Examiner reversed	32
Total	226

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,694,692, Amos, McCurdy and McIntyre, METHOD OF MAKING LINEAR INTERPOLYMERS OF MONOVINYL AROMATIC COMPOUNDS AND A NATURAL OR SYNTHETIC RUBBER, **filed** Dec. 7, 1965, D.C. Del. (Wilmington), Doc. 3132, *Cosden Oil & Chemical Company* v. *The Dow Chemical Company.* Decision: Stipulation of dismissal with prejudice pursuant to Rule 41(a)(1)(ii) of the Federal Rules of Civil Procedure, Jan. 24, 1973.

2,782,448, J. W. Anderson, WINDSHIELD WIPER BLADE ASSEMBLIES; **2,782,449,** same, WINDSHIELD WIPER BLADE AND CARRIAGE ASSEMBLIES; **3,372,422,** same; **3,372,423,** same, WINDSHIELD CLEANER, **filed** Jan. 30, 1973, D.C.R.I. (Providence), Doc. CA 5107, *Fram Corporation* v. *The Anderson Co.*

2,782,449. (See 2,782,448.)

2,898,786, J. R. Willingham, BLIND HOLE DRILL; **3,054,308,** G. A. Larry, DRILL; **3,071,030,** same, HOLE FORMING OR ENLARGING ASSEMBLY; **Re. 24,924,** J. R. Willingham, GUN DRILLING TOOL, **filed** Nov. 6, 1972, D.C., E.D. Mich. (Bay City), Doc. 3238, *John R. Willingham et al.* v. *Norman B. Lawton et al.*

2,984,416, N. B. Johnson (deceased), by K. S. Johnson (administrator), HOT AIR HEATING METHODS, **filed** Jan. 30, 1973, D.C., W.D.N.Y. (Buffalo), Doc. C-1973-50, *Johnson Heater Corporation* v. *Mosler Safe Company and Western New York Industrial Park, Inc.*

2,989,302, H. B. Clark, FIRE DOOR OPERATING APPARATUS; **3,166,155,** same, MOTOR OPERATED FIRE DOORS WITH AUTOMATIC DOOR RELEASE, **filed** Jan 30, 1973, D.C.N.J. (Newark), Doc. C-119-73, *Mesker Brothers Industries, Inc. et al.* v. *Henry B. Clark.*

3,009,525, R. DeLiban, GUIDANCE SYSTEMS; **3,147,817,** same, **filed** Jan. 12, 1973, D.C., E.D. Mich. (Detroit), Doc. 39494, *Barrett Electronics Corporation* v. *Jervis B. Webb Co.*

3,028,877, J. W. Thieme, PRESSURE AND FLOW CONTROL VALVE, **filed** Jan. 22, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c185, *Acco International Inc.* v. *Swingline Inc.*

3,054,308. (See 2,898,786.)

3,071,030. (See 2,898,786.)

3,095,777, R. L. Hallock, DRIVEN FASTENER HAVING PENETRATING POINT FOR ATTACHING OBJECTS TO METAL, **filed** D.C., S.D. Ohio (Dayton), Doc. 3981, *Gripnail Corp. et al.* v. *H. A. Jones, Inc.* Final judgment on consent including permanent injunction. Plaintiffs owners of patent, and claims are valid; defendant agreed to a permanent injunction; counterclaims involved in this action, dismissed with prejudice as to all parties, Jan. 23, 1973.

3,114,349, S. Schuman, STERILIZATION INDICATORS, **filed** Nov. 13, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 6611, *Propper Mfg. Co. Inc.* v. *Adhere Corp.* Decision: Stipulation of dismissal including all claims and counterclaims, shall be dismissed with prejudice pursuant to Rule 41(a)(1), Nov. 13, 1972.

3,137,119. C. Crouzet, PROCESS FOR THE PRODUCTION OF HIGH BULK YARNS; **3,382,656,** H. Crouzet, FALSE-TWIST FRAMES AND METHOD FOR TEXTURING SYNTHETIC FILAMENTS, **filed** Jan. 3, 1966, D.C.S.C. (Spartanburg), Doc. 71-306, 70-968, 69-1096, 68-705, 69-777, 70-14, 70-189, 70-250, 70-295, 70-358, 70-385, 70-386, 70-391, 70-493, 70-622, 70-628, 70-677, 70-683, 71-87, 71-88, 71-89, 71-90, 71-91, 71-92, 71-93, 71-94, 71-95, 71-96, 71-97, 71-98, 71-99, 71-100, 71-101, 71-102, 71-115, 71-126, 71-127, and 71-283, *The Duplan Corporation* v. *Deering Milliken Inc., Deering Milliken Research Corp., Moulinage et Retorderie de Chavanoz, Ateliers Roannais de Constructions Textiles, and AROT Inc.; Deering Milliken Research Corporation* v. *Duplan Corp. and Burlington Industries Inc.; The Duplan Corp. et al.* v. *Deering Milliken Research Corporation and Deering Milliken Inc., Moulinage et Retorderie de Chavanoz, Ateliers Roannais de Constructions Textiles, and AROT Inc.* Decision: Said U.S. patents invalid, Jan. 17, 1972.

3,147,817. (See 3,009,525.)

3,149,431, M. B. Blish, SELF-ALIGNING NECK CARD LABEL, **filed** Jan. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c194, *Matthew B. Blish* v. *Goldblatt Brothers Inc. et al.*

3,166,155. (See 2,989,302.)

3,180,335, Duncan and Baker, DISPOSABLE DIAPER; **Re. 26,151,** same, **filed** Jan. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c237, *Procter & Gamble Co.* v. *Weyerhaeuser Co.*

3,333,888, Williams and Williams, WALKING TRACTOR CABS, **filed** Jan. 22, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73 F 13, *Original Tractor Cab Company Inc.* v. *International Harvester Company and Royal Industries Inc.*

3,372,422. (See 2,782,448.)

3,372,423. (See 2,782,448.)

3,382,656. (See 3,137,119.)

3,448,608, A. M. Namirowski, SALT-SEPARATING UNIT FOR BAKING APPARATUS, **filed** Jan. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c196, *A. M. Namirowski* v. *National Biscuit Co.*

3,480,019, S. J. Popell, ROLLER, CLIP AND COMPOSITION OF MATTER; **3,493,722,** same, HAIR CURLER STEAMER AND FACIAL SAUNA DEVICE; **3,493,723,** same, ELECTRIC STEAMING APPLIANCE, **filed** Feb. 10, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c295, *Popell Brothers Inc.* v. *Schick Electric, Inc.* Findings of fact and conclusion of law, order complaints in 71c295, 71c591, 71c979, and 71c1352 dismissed, Nov. 14, 1972.

3,485,312, Swenson and Skine, SNOWMOBILE TREAD DRIVE AND SUSPENSION SYSTEM, **filed** Jan. 2, 1970, Doc. 70-C-4, *Arctic Enterprises Inc.* v. *Huber Paint & Glass Inc.* Decision: Plaintiff's complaint is dismissed; patent invalid, Jan. 23, 1973. Same, **filed** Feb. 18, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-88, *Arctic Enterprises Inc.* v. *Boulder Parts Corporation.* Decision: Plaintiff's complaint is dismissed; patent invalid, Jan. 23, 1973.

3,493,722. (See 3,480,019.)

3,493,723. (See 3,480,019.)

3,514,798, R. Ellis, SURF-BOARD CONSTRUCTION AND METHOD OF MAKING SAME, **filed** Jan. 24, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-142-JWC, *Neal Townsend* v. *W.A.V.E. Inc. and Karl Pope.*

3,561,146, R. H. Dembar, PHOTOGRAPH DISPLAY APPARATUS, **filed** C.A. Sixth Circuit, Mich. (Detroit), Doc. 72-1555, *Graphicana Corporation* v. *Bata Corporation.* Appellant is owner of patent; upon motion by the appellee for summary judgment, the District Court found that the appellee's device did not infringe upon the appellant's patent because it lacked one of the elements of that patent, the validity of the patent is not in issue. The summary judgment granted by the District Court on this issue will not be disturbed. The judgment of the District Court is affirmed, Jan. 30, 1973.

3,711,864, G. Dickstein et al. HELMET STRUCTURE, **filed** Jan. 25, 1973, D.C., N.D. Ohio (Cleveland), Doc. C-73-79, *George Dickstein* v. *Seventy Corporation and Grantham Inc.*

Re. 24,855, E. M. Noel, CONTINUOUS GRIDDLE, **filed** Jan. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c55, *International Multifoods Corp.* v. *Campbell Soup Co. and Pepperidge Farm Inc.*

Re. 24,924. (See 2,898,786.)

Re. 26,151, Duncan and Baker, DISPOSABLE DIAPER, **filed** Jan. 31, 1973, D.C., W.D. Wash. (Seattle), Doc. 70-73C2, *Weyerhaeuser Company* v. *Procter & Gamble Co.*

Re. 26,151. (See 3,180,835.)

Certificates of Correction for the Week of June 5, 1973

D. 223,694	3,677,781	3,693,069	3,704,847
D. 225,483	3,678,713	3,693,106	3,705,076
D. 225,749	3,679,384	3,693,113	3,705,279
D. 225,799	3,679,749	3,693,253	3,705,468
D. 226,023	3,680,037	3,694,365	3,705,647
3,515,968	3,681,839	3,694,466	3,705,648
3,532,081	3,681,998	3,694,515	3,706,120
3,536,694	3,682,204	3,694,545	3,706,165
3,539,045	3,682,936	3,694,970	3,706,341
3,557,895	3,683,091	3,695,121	3,706,648
3,560,479	3,683,348	3,695,129	3,706,702
3,574,955	3,683,437	3,695,244	3,706,925
3,582,411	3,683,859	3,695,585	3,707,088
3,584,183	3,684,000	3,696,186	3,707,497
3,587,946	3,684,164	3,696,859	3,707,915
3,596,438	3,684,253	3,697,315	3,708,165
3,600,033	3,684,323	3,697,989	3,708,207
3,617,944	3,684,340	3,698,529	3,708,331
3,620,699	3,685,090	3,698,588	3,708,524
3,623,523	3,685,241	3,698,985	3,709,016
3,626,278	3,685,507	3,699,076	3,709,056
3,636,536	3,685,567	3,699,228	3,709,276
3,639,194	3,686,040	3,700,268	3,709,389
3,639,457	3,686,186	3,700,672	3,709,853
3,643,542	3,686,210	3,700,682	3,709,868
3,646,023	3,686,367	3,700,868	3,709,934
3,646,210	3,686,405	3,700,890	3,710,165
3,646,556	3,686,635	3,700,975	3,710,324
3,646,830	3,686,837	3,701,398	3,710,672
3,647,397	3,686,867	3,701,399	3,710,861
3,651,091	3,687,565	3,701,737	3,711,286
3,653,751	3,687,682	3,701,971	3,711,701
3,653,951	3,688,295	3,702,165	3,712,320
3,659,011	3,688,872	3,702,525	3,712,396
3,663,775	3,689,543	3,702,580	3,712,440
3,664,819	3,690,247	3,702,618	3,712,568
3,666,476	3,691,190	3,702,711	3,712,690
3,667,630	3,691,240	3,702,805	3,713,123
3,669,217	3,692,085	3,702,921	3,713,711
3,672,252	3,692,311	3,703,491	3,713,851
3,674,508	3,692,363	3,703,510	3,714,044
3,674,880	3,692,405	3,703,593	3,714,088
3,675,090	3,692,606	3,704,227	3,716,895
3,676,705	3,692,839	3,704,308	
3,677,255	3,692,879	3,704,676	
3,677,490	3,692,939	3,704,806	

Classification Order No. 411

Classification Order No. 411, dated Mar. 28, 1973, incorporates changes in the following classes:

60, POWER PLANTS
204, CHEMISTRY, ELECTRICAL AND WAVE ENERGY
250, RADIANT ENERGY
271, SHEET FEEDING OR DELIVERING

DESIGN CLASSES

D1, FOODSTUFFS AND DIETETIC FOODS
D6, FURNISHINGS
D7, HOUSEHOLD GOODS, NOT ELSEWHERE SPECIFIED—Established
D9, PACKAGES AND CONTAINERS
D22, ARMS AND EQUIPMENT FOR HUNTING, FISHING, VERMIN AND INSECT TRAPPING
D23, FLUID OR GAS DISTRIBUTION, SANITARY, HEATING, VENTILATION AND AIR CONDITIONING EQUIPMENT
D26, ELECTRICITY
D36, GLASS—Abolished
D37, GRINDING AND POLISHING
D44, HOUSEHOLD ARTICLES—Abolished
D49, LAUNDRY, DRY CLEANING AND CLEANING
D54, METAL WORKING
D81, COOKING RANGES, STOVES AND COOKERS
D89, VEGETABLE CUTTERS AND CRUSHERS—Abolished

All changes will be incorporated in the Manual of Classification pages dated April 1973.

E. E. YOUNG,
Acting Administrator,
Office of Patent Classification.

Patents Withdrawn From Register

General Electric Company hereby withdraws the following patent from the Register of Patents Available for Licensing or Sale. The patent was listed as being available in the OFFICIAL GAZETTE as indicated below:

3,532,931. PHOTOFLASH ASSEMBLY FOR SEQUENTIALLY FLASHING LAMPS UTILIZING VOLTAGE AND CURRENT RESPONSIVE DEVICES. Feb. 13, 1973.

Patents Available for Licensing or Sale

D. 222,363. DECORATIVE HANGING INCLUDING SKELETAL FRAMEWORK. Clifton Bullard, 310 Prescott Place, Plainfield, N.J., 07063.

2,762,485. AUTOMATIC COMPOSING MACHINE. Georges P. BaFour et al. Correspondence to: Cabinet Chereau and Cabinet Rodes, 107 Boulevard Pereire, 75017 Paris, France.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 11791.

3,465,373. HOSPITAL BED. Harriet A. Wilson, 115 Hilltop Road, Waverly, Pa., 18471.

3,474,799. TOOTH SPACE DENTAL FLOSS HOLDER CLEANER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,602,389. CONTAINER OPENER AND HANDLE ASSEMBLY. David E. Russell, 110 Riverside Ave., Jacksonville, Fla., 32202.

3,609,533. FAULT LOCATING SYSTEM FOR DETERMINING DISTANCE, ETC. William H. Pardis, 1300 1st Ave. S., Great Falls, Mont., 59401.

3,636,938. PORTABLE COOKING GRILL. Edward J. Faltersack, 19517 Almaden Road, San Jose, Calif., 95120.

3,642,325. PROCESS AND APPARATUS FOR MINING BY RETREAT REAMING. Charles S. Mulvaney, 2211 Greenleaf Ave., Chicago, Ill., 60645.

3,661,166. FLUID LOGIC CONTROL SYSTEM. R. W. Watson, Garlock Inc., Division St., Palmyra, N.Y., 14522.

3,698,512. COLLAPSIBLE LADDER DEVICE. John V. Cebular, 2126 Shallcross St., Philadelphia, Pa.

3,703,210. MOLD BOARD MATERIALS GATE FOR MOTOR PATROLS. Marion Williams or Raymond R. Miller, Route #3, Box 74–C, Moscow, Idaho, 83843.

3,712,307. SKIN CONDITIONING APPARATUS. Veronica H. McLaughlin, 5521 El Sereno, Los Altos, Calif., 94022.

3,724,557. APPARATUS ADAPTED TO BE COUPLED TO A TRACTION VEHICLE SERVING FOR THE MAINTENANCE OR CONSTRUCTION OF WATERBOUND ROADS. Marcel Boschung et al. Correspondence to: Werner W. Kleeman, Suite 501, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,727,857. CONVERTIBLE FISHING REEL. George B. Chann, 160 Church St., Bridgeton, N.J., 08302.

First Kentucky Trust Company, Executor of the Donald McDonald Estate, offers to license or sell the following 2 patents.

Replies should be directed to: First Kentucky Trust Company, P.O. Box 1677, Louisville, Ky., 40201. Attn. R. M. Biggs.

2,807,253. CAMERA.

3,136,612. DISH DRYER.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 18 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,719,981. METHOD OF JOINING SOLDER BALLS TO SOLDER BUMPS.

3,720,525. ELECTROLESS COPPER PLATING SOLUTIONS WITH ACCELERATED PLATING RATES.

3,720,922. CHARGE COUPLED MEMORY.

3,720,925. MEMORY SYSTEM USING VARIABLE THRESHOLD TRANSISTORS.

3,721,553. METHOD OF TRANSFERRING MAGNETIC TONER PARTICLES IN AN IMAGE CONFIGURATION AND APPARATUS THEREFOR.

3,721,857. WAVEFORM GENERATING CIRCUIT.

3,721,889. LOAD SENSING CIRCUITS.

3,721,918. NEGATIVE RESISTANCE SEMICONDUCTOR COUPLED TRANSMISSION LINE APPARATUS.

3,721,923. ELECTRICALLY VARIABLE WAVEGUIDE PHASE SHIFTER COMPRISING A SLAB OF SEMICONDUCTIVE MATERIAL.

3,721,924. VARIABLE DELAY LINE UTILIZING ONE PART REFLECTION TYPE AMPLIFIER.

3,721,930. DEFLECTION YOKE FOR USE WITH IN-LINE ELECTRON GUNS.

3,721,931. ELECTROMAGNETIC FOCUSING AND DEFLECTION ASSEMBLY FOR CATHODE RAY TUBES.

3,721,955. DISABLED VEHICLE SIGNALLING SYSTEM.

3,721,990. PHYSICALLY SMALL COMBINED LOOP AND DIPOLE ALL CHANNEL TELEVISION ANTENNA SYSTEM.

3,722,044. FABRICATION OF FOCUS GRILL TYPE CATHODE RAY TUBES.

3,723,651. OPTICALLY-SCANNED LIQUID-CRYSTAL PROJECTION DISPLAY.

3,723,833. HEAT SINKING OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES.

3,723,905. DUAL-GATE MOS-FET OSCILLATOR CIRCUIT WITH AMPLITUDE STABILIZATION.

The General Electric Company is prepared to grant nonexclusive licenses under the following 79 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 4 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,395,443. METHOD OF FORMING A HIGH TEMPERATURE RESISTANT BOND BETWEEN ALUMINUM AND A DISSIMILAR METAL.

3,430,015. VACUUM-TYPE INTERRUPTER HAVING BRAZED JOINTS PROTECTED FROM WELD-INHIBITING CONSTITUENT IN CONTACT STRUCTURE.

3,495,165. VACUUM DEVICE GAS MEASUREMENT APPARATUS AND METHOD.

3,622,724. VACUUM-TYPE CIRCUIT INTERRUPTER HAVING CONTACTS WITH IMPROVED ARC-REVOLVING MEANS.

Applications for license under the following 18 patents may be addressed to: Division Patent Counsel, Lamp Business Division, General Electric Co., Nela Park, Cleveland, Ohio, 44112.

3,598,984. PHOTOFLASH LAMP ARRAY.

3,598,985. CONSTRUCTION OF DISPOSABLE PHOTOFLASH LAMP ARRAY.

3,609,332. PHOTOFLASH LAMP ARRAY WITH REFLECTOR-LAMP MODULE.

3,617,763. DELAY LINE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,619,715. RESISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,635,647. ELECTRICAL RESISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,663,861. CIRCUIT UTILIZING FEEDBACK AMPLIFIER FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,668,468. SOLID STATE CIRCUITS FOR GUARANTEED SEQUENTIAL FLASHING OF PHOTOFLASH LAMP ARRAY.

3,669,607. SIMPLIFIED DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,670,639. FLEXIBLE ELECTRONIC INTEGRATED CIRCUIT CAMERA CONTROL ASSEMBLY.

3,676,044. CIRCUIT UTILIZING MAGNETIZED CORES FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,676,045. SEQUENCING STATIC ELECTRONIC FLASHING CIRCUITS FOR PHOTOFLASH LAMP ARRAY.

3,676,046. RESISTOR CIRCUIT ASSEMBLY FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,694,696. DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,694,697. TRANSISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS.

3,714,508. SEQUENTIAL FLASHING OF MULTIPLE LAMPS BY LOW COST STATIC CONTROL CIRCUIT OF INTEGRATED DESIGN.

3,718,422. PHOTOFLASH FIRING CIRCUITS EMPLOYING SERIES RESISTOR-DIODE COMBINATIONS.

3,725,693. LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR.

Applications for license under the following 57 patents may be addressed to: Patent Counsel Electronic Components Business Division, General Electric Company, 316 E. 9th St., Owensboro, Ky.

3,302,072. ELECTRICAL DEVICE WITH CASING SEAL MEMBERS COMPRISING A CAVITY IN MEETING SURFACE.

3,302,073. ELECTRICAL CAPACITORS AND ELECTRODE MATERIAL THEREFOR.

3,310,724. BATTERY CHARGING REGULATORS.

3,325,698. ELECTRICAL CAPACITOR ELECTRODE AND METHOD OF MAKING THE SAME.

3,335,073. METHOD OF MAKING ANODIZED TANTALUM FOIL.

3,351,794. ELECTRON BEAM DEVICE WITH HIDDEN CATHODE HAVING ANNULAR, FRUSTO-CONICAL EMISSIVE SURFACE.

3,351,823. NON-AQUEOUS CAPACITOR ELECTROLYTE HAVING A SALT DISSOLVED IN A CO-SOLVENT.

3,356,533. SECONDARY CELL HAVING HYDROGEN-OXYGEN RECOMBINATION CATALYST IN COMMUNICATION WITH ELECTROLYTE CHAMBER.

3,365,626. ELECTRICAL CAPACITOR.

3,368,100. VACUUM PUMP HAVING A RADIALLY SEGMENTED, ANNULAR ANODE.

3,378,408. ELECTROLYTIC CELL EMPLOYING ALUMINUM AS NEGATIVE ELECTRODE AND AN ALKALINE ELECTROLYTE CONTAINING HYPOCHLORITE ANIONS.

3,378,471. ANODIZED TANTALUM AND NIOBIUM AND METHOD OF FORMING AN OXIDE COATING THEREON.

3,378,767. MARKING INCREMENTAL LENGTHS OF INSULATED FOIL STRIP ELECTRODES IN EQUAL CAPACITANCES IN RESPONSE TO INTEGRATED SPEED AND CAPACITANCE SIGNALS.

3,382,102. ZINC-BROMINE SECONDARY CELL.

3,386,047. TRANSVERSE WAVE AMPLIFIER.

3,401,314. ELECTROLYTIC CAPACITOR HAVING A COVER WITH SEALING AND VENTING MEANS THEREIN.

3,409,978. METALCLADDING PROCESS.

3,415,689. FLUOROCARBON BONDED SPINAL OXYGEN ELECTRODE.

3,421,068. TRICKLE CHARGE VOLTAGE STABILIZATION NICKEL-CADMIUM BATTERY.

3,422,319. BONDED COMPOSITE END PLUG SEAL FOR ELECTROLYTIC CAPACITORS.

3,429,831. LITHIATED NICKEL OXIDE CRYSTALS.

3,434,812. THERMIONIC CATHODE.

3,437,949. OUTPUT CIRCUITS FOR MICROWAVE DISCHARGE DEVICES.

3,454,825. COMPOSITE MAGNET STRUCTURE.

3,458,754. INVERTED CROSS FIELD DEVICE HAVING AN ARCUATELY SEGMENTED CATHODE.

3,459,651. PROCESS OF CONTINUOUSLY FORMING BIPOLAR ELECTRODES BY THE USE OF ELECTROPHORESIS.

3,475,297. METHOD OF MAKING BATTERY SEPARATORS.

3,475,572. ACCELLERATION ACTUATED SWITCH WITH EXPLOSIVE CHARGE AND THERMITIC MATERIAL.

3,475,659. SELF-HEALING CAPACITOR ASSEMBLY.

3,477,875. BATTERY HAVING ELECTRODEPOSITED SEPARATOR ON THE PLATES AND METHOD OF MAKING SAME.

3,479,442. LEAD CONNECTION MEANS FOR VOLTAGE TUNABLE MAGNETRONS.

3,483,438. CAPACITOR HAVING ELECTRODE COATED WITH CONDUCTIVE SOLID POLYMER ELECTROLYTE.

3,484,861. MULTIPLE BEAM R.F. APPARATUS TUNER.

3,486,132. GUNN EFFECT DEVICE HAVING IMPROVED PERFORMANCE.

3,488,227. HERMETIC SEAL CLOSURE FOR AN ELECTROCHEMICAL CELL.

3,497,396. MOISTURE CONSERVING PRESSURE CONTROL UNIT FOR ELECTROCHEMICAL CELLS.

3,502,948. DUAL O-RING SEAL FOR CAPACITORS.

3,503,806. RECHARGEABLE BATTERY OF THE SPIRAL WOUND PLATE TYPE.

3,504,237. ELECTROLYTIC CAPACITOR AND ELECTROLYTE THEREFOR.

3,509,425. ELECTROLYTIC CAPACITOR AND ELECTROLYTE MATERIAL THEREFOR.

3,509,426. CAPACITOR WITH IONIC CONDUCTING CERAMIC ELECTROLYTE.

3,509,427. ELECTROLYTE CAPACITOR CASING STRUCTURE.

3,516,018. OPERATION OF SERIES CONNECTED GUNN EFFECT DEVICES.

3,516,862. RECHARGEABLE ALKALINE-ZINC CELL WITH POROUS MATRIX CONTAINING TRAPPING MATERIAL TO ELIMINATE ZINC DENDRITES.

3,521,146. MICROWAVE POWER RECTIFIER WITH MULTIPACTOR DISCHARGE.

3,525,135. THERMIONIC CATHODE.

3,525,895. LIQUID POOL CATHODE TYPE DISCHARGE DEVICE WITH COMPLEMENTARY BAFFLE MEANS.

3,525,897. ELECTRON DISCHARGE DEVICE.

3,527,976. LOG PERIODIC ELECTRON DISCHARGE DEVICE.

3,531,382. DRY OXIDE CAPACITOR AND METALLIZING PROCESS FOR MAKING SAME.

3,531,693. ELECTROLYTIC CAPACITOR WITH RUTHENIUM METAL CATHODE SURFACE.

3,532,555. ENCAPSULATED ELECTROLYTE BATTERY.

3,534,209. IMAGE ORTHICON TARGET ASSEMBLY AND SEALING GLASS COMPOSITION THEREFOR.

3,547,423. ELECTROLYTIC CAPACITOR AND ELECTROLYTE MATERIAL THEREFOR.

3,548,246. BICONICAL LOG PERIODIC AMPLIFIER.

3,548,264. ELECTROLYTIC CAPACITOR RIVET SEAL.

3,548,265. POROUS ANODE CAPACITOR.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 15, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-27-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-04-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-14-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-04-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy. Rocket Fuels; Radio-Active Material.	8-23-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Device and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-09-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-25-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-31-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-13-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-14-72

Expiration of patents: The patents within the range of numbers indicated below expire during May 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,743,442 to 2,748,387, inclusive
Plant Patents..... Numbers 1,472 to 1,480, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 5, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

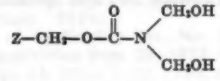
T911,001
DURABLE-PRESS TEXTILES OF IMPROVED STAIN RELEASE

Howard M. Lewis, 1912 Hermitage Drive 37664, and Forrest F. Schrum, Jr., 839 Sir Echo Drive 37663, both of Kingsport, Tenn.

Continuation of abandoned application Ser. No. 845,878, July 29, 1969. This application Mar. 15, 1971, Ser. No. 124,588

Int. Cl. D06m *9/00*
U.S. Cl. 8—115.6
No Drawing. 19 Pages Specification

Durable-press, polyester-cellulosic blend textile material of improved stain release properties are prepared by impregnating said textile material with a composition comprising (A) a surface active agent selected from a polyalkylene glycol ether of bis(alkyl-substituted hydroxyphenyl)methane or the condensation product of castor oil and ethylene oxide (B) a carbamate compound having the structure:

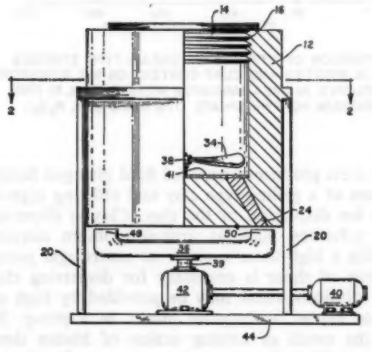


wherein Z is H, an alkyl of 1 to 2 carbon atoms, $HOCH_2$— or CH_3O— and (C) a softener comprising the monomeric condensation product of a fatty acid having 10 to 18 carbon atoms and a polyethylene glycol.

T911,002
MAGNETIC TORQUE TRANSFER SYSTEM

James W. Henry, 3958 Skyland Drive, Kingsport, Tenn. 37664

Filed Sept. 9, 1971, Ser. No. 178,975
Int. Cl. B01f *13/08*
U.S. Cl. 259—108
3 Sheets Drawing. 9 Pages Specification

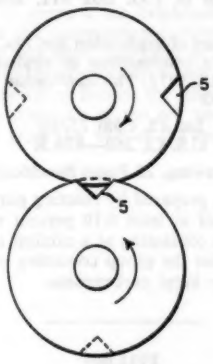


A magnetic torque transfer system is disclosed in which a magnetized driving member is coupled to a magnetized driven member through magnetic flux, wherein the members are separated by a reluctant shield, air gap, or both. The efficiency of the system is greatly increased by providing low reluctance, temporarily magnetizable elements between the magnetized driving and driven members, extending though the high reluctance shield or air gap. The efficiency may be further increased by the use of exciting coils on the elements. The system is particularly useful in autoclaves.

T911,003
GRANULATION SLITTER

Louis Eugene Himelreich, Jr., Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1972, Ser. No. 241,682
Int. Cl. B26d *1/24*
U.S. Cl. 83—675
1 Sheet Drawing. 3 Pages Specification



An improved rotary slitter wherein circular intermeshed slitting discs are notched. The slitter periodically leaves an uncut portion of the feed material, forming filaments which are interconnected.

T911,004
LITHOGRAPHIC PRINTING PLATE

James F. McKague, Kodak Park, Rochester, N.Y. 14650

Filed Apr. 20, 1972, Ser. No. 246,014
Int. Cl. G03f *7/02*
U.S. Cl. 96—86
No Drawing. 20 Pages Specification

A lithographic printing plate comprises an aluminum surface coated with a coating of chromium phosphate and having thereon an image-forming layer which can be a radiation sensitive layer or a silver precipitating layer. The aluminum is typically immersed in an aqueous solution of chromium oxide, phosphoric acid and sodium fluoride. An image can be obtained on the plate by diffusion

transfer after which the plate is treated with an oleophilic compound to improve the ink water differential or the image may be formed using a light sensitive coating such as a silver halide emulsion, diazo resin, etc.

T911,005

POLY-ALPHA-OLEFIN GRAFT POLYMERS

Max F. Meyer, Jr., Robert L. Combs, and Willis C. Wooten, Jr., all of P.O. Box 511, Kingsport, Tenn. 37662

Continuation-in-part of application Ser. No. 779,643, Nov. 27, 1968, and a continuation of application Ser. No. 125,844, Mar. 18, 1971. This application May 30, 1972, Ser. No. 257,992

Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R

No Drawing. 32 Pages Specification

Graft polymers prepared by reacting poly-alpha-olefins containing monomers having at least 3 carbon atoms, and having an unsaturation of at least 0.05 percent with vinyl and acrylic monomers containing as a catalyst an organic peroxide selected from the group consisting of benzoyl peroxide and tertiary butyl perbenzoate.

T911,006

POLYETHYLENE GRAFT POLYMERS

Max F. Meyer, Jr., Robert L. Combs, and Willis C. Wooten, Jr., all of P.O. Box 511, Kingsport, Tenn. 37662

Continuation-in-part of application Ser. No. 779,637, Nov. 27, 1968, and a continuation of application Ser. No. 125,892, Mar. 18, 1971. This application May 30, 1972, Ser. No. 257,993

Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R

No Drawing. 23 Pages Specification

Graft polymers prepared by reacting polyethylene having unsaturation of at least 0.10 percent with vinyl and acrylic monomers containing as a catalyst an organic peroxide selected from the group consisting of benzoyl peroxide and tertiary butyl perbenzoate.

T911,007

AROMATIC POLYMERS

Ian Charles Taylor, Bengeo, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 27, 1972, Ser. No. 266,728

Claims priority, application Great Britain, July 5, 1971, 31,414/71

Int. Cl. C07c *147/06*
U.S. Cl. 260—607 A

No Drawing. 7 Pages Specification

Polyarylene sulphides are homogeneously oxidized to polyarylene sulphones according to the process disclosed, which is characterized by first dissolving the oxidant that is selected in a sulfuric acid medium, then adding the polyarylene sulphide to the oxidant-containing sulfuric acid medium. The oxidation reaction is conducted in solution and may be terminated, if desired, at any stage of reaction to produce a polymer which is homogeneously oxidized throughout to an intermediate oxidation stage between the polyarylene sulphide and the ultimate polyarylene sulphone. Partially oxidized polymers are conveniently fabricated into fibers without need of initial filtration.

Illustrative is the oxidation of poly(phenylene sulphide sulphone) where a 30 weight percent solution of hydrogen peroxide in water is added to concentrated sulfuric acid and the resulting solution is added to the poly(phenylene sulphide sulphone) at a temperature between about —30° and 100° C. The resulting polymer had repeating units of the formula:

Only partially oxidized polymers are prepared by using sufficient oxidant, such as hydrogen peroxide, to oxidize only a portion of the thioether linkages to sulphone linkages. Partially oxidized polymers thus formed where the number of —SO_2— and —SO_3— linkages are about equal are soluble in concentrated sulfuric acid and may be wet spun into silky fibers.

T911,008

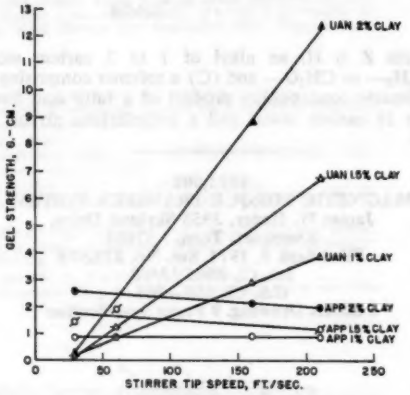
NITROGEN SOLUTIONS AND SUSPENSIONS

John G. Getsinger, 420 Eason, Florence, Ala. 35660

Filed July 31, 1972, Ser. No. 276,591

Int. Cl. C05c *9/00*
U.S. Cl. 71—30

1 Sheet Drawing. 10 Pages Specification



COMPARISON OF EFFECTS OF SHEAR-TYPE STIRRING FOR 16 MINUTES AND CLAY CONTENT ON GEL STRENGTHS DEVELOPED IN UREA-AMMONIUM NITRATE (32% N) AND AMMONIUM POLYPHOSPHATE (11% N AND 37% P_2O_5)

The process produces improved fluid nitrogen fertilizers by addition of a gelling-type clay and utilizing high-shear agitation for dispersion of the clay. Clay is dispersed in nitrogen solutions, such as urea-ammonium nitrate solution, with a high-shear agitator or centrifugal pump. A high degree of shear is necessary for dispersing clay in nitrogen solutions; shear may be provided by high speed of agitator blades or impeller blades in a pump. Shear may be the result of cutting action of blades through the fluid or close clearance of two parts of a shearing-type agitator or pump. Products with clay well dispersed, as measured by a gelometer, have improved storage characteristics at low temperatures, may be used for direct application, and give improved suspensions when mixed

with fluids containing phosphate and potassium. In addition to the improvements in quality, the clay in the nitrogen solution eliminates the necessity of adding extra clay to the NPK fertilizers at the time of fertilizer mixing. Simple blending equipment and operation for mixing fluids can be used at the fertilizer mixing site, as compared with the use of more expensive equipment and operation for gelling the clay.

T911,009

METHOD FOR INCREASING THE AVAILABILITY OF DRUGS HAVING HIGH SERUM PROTEIN BOUND CHARACTERISTICS

John H. Perrin, Madison, Wis., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

Continuation of abandoned application Ser. No. 93,473, Nov. 27, 1970. This application Sept. 25, 1972, Ser. No. 292,248

Int. Cl. A61k *27/00*

U.S. Cl. 424—317

No Drawing. 8 Pages Specification

A method for improving the availability of highly serum protein bound drugs by administering such drug in combination with a water soluble salt of trichloroacetic acid.

T911,010

SPARK GAP ASSEMBLY HAVING ARC-EROSION RESISTANT ELECTRODES

Eugene C. Sakshaug, Grove Ave., Lanesborough, Mass. 01237, and Earl W. Stetson, 132 Unkamet Drive, Pittsfield, Mass. 01201

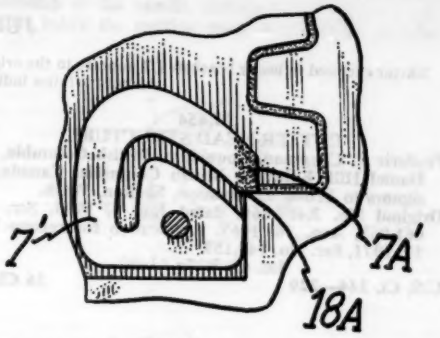
Continuation of application Ser. No. 869,043, Oct. 24, 1969. This application Sept. 29, 1972, Ser. No. 293,654

Int. Cl. H01n *1/00, 7/44, 13/46*

U.S. Cl. 313—325

1 Sheet Drawing. 10 Pages Specification

A spark gap assembly of a type utilized in lightning arresters is provided with electrodes comprising arc-running surfaces having good electrical conductance, in combination with arc-terminal portions formed of refractory metal that prevents arcs extinguished in the spark gap assembly from eroding the arc-terminal portions of the electrodes.



T911,011

DE-INKABLE NEWS INK COMPOSITIONS

Michael Pugliese, Passaic, N.J., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 20, 1972, Ser. No. 299,543

Int. Cl. C09d *11/00*

U.S. Cl. 106—32

No Drawing. 12 Pages Specification

A news ink composition for use in printing newspaper, containing a water soluble, nonionic, dispersing and emulsifying agent to improve the brightness of the de-inked newsprint. The ink composition comprises carbon black, mineral ink oil and small quantities of a dispersing agent which physically or chemically attach to the ink ingredients. In the de-inking process the dispersing agent emulsifies the dark materials of the ink and frees them in a colloidal state from the web of the recovered pulp.

REISSUES

JUNE 5, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

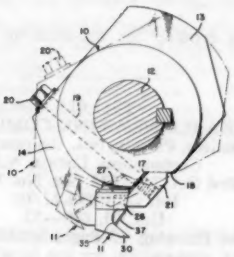
27,654
CUTTER-HEAD STRUCTURE

Frederic F. Chapman, Coquitlam, British Columbia, and Daniel Hill, Kelowna, British Columbia, Canada, assignors to Ernest E. Runnion, Shelton, Wash.

Original No. 3,487,865, dated Jan. 6, 1970, Ser. No. 661,062, Aug. 16, 1967. Application for reissue May 17, 1971, Ser. No. 144,159

Int. Cl. B27g *13/00*

U.S. Cl. 144—229 16 Claims



A cutter head with a chipping tooth for taking slices of wood from a work piece, the slices separating into cards by horizontal shear, and incorporating a splitter which initiates on the cards as they are projected from the cutting tooth a vertical shear to insure that the cards will be divided into chips of a width most desirable for the digesting process of a high-grade pulping operation.

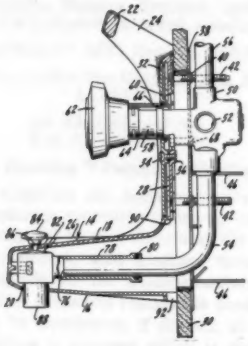
27,655
BATHTUB COMBINATION PLUMBING FIXTURE

Paul A. Mongerson, Elyria, and Joseph E. Ellison, Amherst, Ohio, assignors to Stanadyne, Inc., Hartford, Conn.

Original No. 3,443,266, dated May 13, 1969, Ser. No. 685,375, Nov. 24, 1967. Application for reissue May 8, 1970, Ser. No. 35,948

Int. Cl. E03c *1/00*; F16l *5/00*

U.S. Cl. 4—191 17 Claims



This invention relates to a plumbing fixture and means for mounting it. In particular the invention relates to a bathtub combination plumbing fixture which may include, as an integral part of the fixture, a grab bar or hand grip, a mixing valve and a control member therefor, a soap dish, a spout for water discharge into the tub, and a diverter for controlling water flow to the spout or shower. The mounting for the plumbing fixture is formed by means of a mounting plate, poisitioned on the opposite side of the wall surface from the utilitarian and decorative portions of the plumbing fixture described above.

27,656
PROCESS OF CURING POLYMERIZABLE RESINS HAVING TERMINAL VINYL ESTER GROUPS USING HIGH ENERGY ELECTRONS

Lewis S. Miller, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Original No. 3,560,237, dated Feb. 2, 1971, Ser. No. 721,152, Apr. 15, 1968. Application for reissue Oct. 28, 1971, Ser. No. 193,580

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 16 Claims

A process of coating a porous or nonporous substrate with a liquid polymerizable film and subjecting the coated substrate to ionizing radiation sufficient to impart to the coating composition a dose of from 1 to 10 megarads in one second or less. The coating compositions, capable of substantially complete polymerization in less than one second, contain undiluted vinyl ester resins having terminal vinyl ester groups, or the above dissolved in vinyl monomers. The vinyl ester resins are made by reacting:

(1) A polyfunctional material selected from the group consisting of (a) dicarboxylic acids *or acid chlorides* having from 4 to 15 carbon atoms, *and* (b) [polyepoxides having terminal, reactive glycidyl groups, (c)] polyfunctional isocyanates having terminal, reactive isocyanate group [, or (d) dicarboxylic acid esters of polyepoxides, polyamines, polyisocyanates,] with *2-hydroxyalkyl acrylates or methacrylates; or*

(2) *a half ester of* 2-hydroxyalkyl acrylate[s] or methacrylate[s] *and a dibasic acid with a polyepoxide.*

Particularly useful are coating compositions containing resins having terminal acrylate groups and an acrylate monomer, the polyfunctional acrylate having more than one 2-oxyalkylacrylate end group per molecule with the end groups being joined by a hydrophobic molecule such as a dicarboxylic acid, polyfunctional isocyanate or polyepoxide.

27,657
BALE THROWER

Gust Soteropulos and Theodore Marion Barnes, by Deere and Co., Moline, Ill., assignee

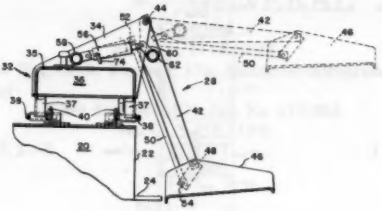
Original No. 3,521,766, dated July 28, 1970, Ser. No. 756,886, Sept. 3, 1968. Application for reissue May 28, 1971, Ser. No. 148,247

Int. Cl. B65g *31/00, 67/22*

U.S. Cl. 214—42 R 5 Claims

A pull-type pickup baler has a fore-and-aft bale case with a rearward discharge opening. A bale thrower is mounted on the baler and includes a horizontal pan which receives successives bales discharged from the bale case. The pan is mounted on a pair of swingable arms,

which are actuated by a hydraulic cylinder and swing the pan upwardly and rearwardly when the bale moves onto



the pan, to accelerate the bale so that its momentum carries it into a trailing bale-receiving vehicle.

27,658

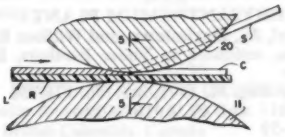
FLAT CABLE PROCESS

Lawrence R. Travis, Brockton, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Original No. 3,473,218, dated Oct. 21, 1969, Ser. No. 592,605, Nov. 7, 1966. Application for reissue Sept. 17, 1971, Ser. No. 181,405

Int. Cl. H01b *13/00;* **H05k** *3/00*

U.S. Cl. 29—624 **4 Claims**



The disclosure relates to a process of providing isolated electrical conductors on an insulative support by partially cutting conductive material affixed to said support and simultaneously removing portions of the partially cut material by pulling and tearing.

27,659

METHOD FOR MANUFACTURING AN IMPROVED COMPOSITE GEAR

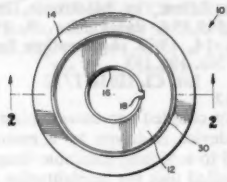
Robert L. Wolfe and Augustine Trebnik, Columbus, Ind., assignors to Reliance Electric Company, Cleveland, Ohio

Original No. 3,557,423, dated Jan. 26, 1971, Ser. No. 755,902, Aug. 28, 1968. Application for reissue Apr. 24, 1972, Ser. No. 247,191

Int. Cl. B21d *53/28;* **B21h** *5/00;* **B21k** *1/30;* **B23p** *15/14;* **B29d** *15/00*

U.S. Cl. 29—159.2 **19 Claims**

The method of fabricating an improved composite gear which comprises the steps of arranging an inner ferrous metal annulus and an outer bronze annulus to define a concentric annular space therebetween, placing a solder member adjacent the annular space, heating the annuli and the solder member concurrently, while maintaining the recited relationship of the annuli, to cause molten metal from the solder member to flow into and fill the annular space, and then, while maintaining the recited relationship of the annuli, cooling the annuli to a temperature below the melting point of the solder member,



thereby to join the annuli and to improve the wear characteristics of the bronze annulus. Gear teeth may be machined in the external surface of the bronze annulus either before or after the two annuli are so joined. The method of the present invention contemplates heating and cooling the bronze annulus in such a manner as to improve its wear or durability characteristics.

27,660

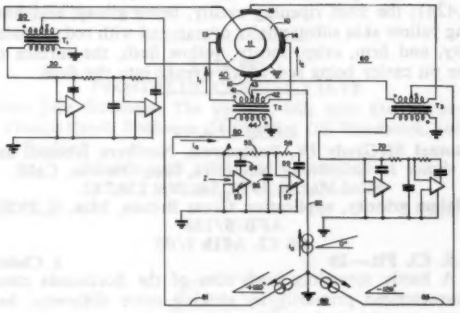
ELECTROSTATIC SUPPORT

James L. Atkinson, La Mirada, Calif., assignor to North American Rockwell Corporation

Original No. 3,411,838, dated Nov. 19, 1968, Ser. No. 532,371, Mar. 7, 1966. Application for reissue Apr. 8, 1970, Ser. No. 26,548

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **7 Claims**



1. An electrostatic support system for supporting a member between a pair of electrodes comprising in combination:

electrostatic support circuit establishing an alternating potential between said member and said electrodes for electrostatically supporting said member;

sensing means providing an alternating signal indicative of the displacement of said member from a centered position between said pair of electrodes; and

negative impedance means responsive to said alternating signal and providing a signal to said electrostatic support circuit varying said alternating potential between said member and said electrodes so as to effect

substantial centering of said member between said pair of electrodes.

27,661
MAGNETICALLY COUPLED IMPLANTABLE SERVOMECHANISM

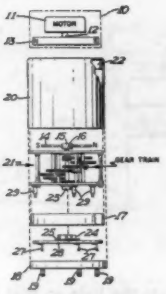
Lee R. Bolduc, St. Louis Park, and George F. Schwoboda, New Brighton, Minn., by Medtronic, Inc., assignee

Original No. 3,569,894, dated Mar. 9, 1971, Ser. No. 815,857, Apr. 14, 1969. Application for reissue Oct. 18, 1971, Ser. No. 190,193

Int. Cl. H01c *1/12*

U.S. Cl. 338—12 **8 Claims**

A magnetically coupled servomechanism wherein a remote magnetic device is driven by a motor and is magnetically coupled to a second rotatable magnetic device in a hermetically sealed unit for implantation in the body of an animal, which device imparts its resultant motion to an [output] *imput* shaft connected to a stepdown gear train having an output shaft which imparts torque to the element it is desired to rotate. The input shaft, gear train and output shaft are also in the hermetically sealed unit. The output shaft shaft may be electrically insulated from the element to be driven, such as a potentiometer. The mechanism may be used to selectively drive more than one element, in which case a drive device is slideably



mounted on the output shaft of the gear train, to be selectively slid longitudinally along the shaft to couple with the selected element for driving.

PLANT PATENTS

GRANTED JUNE 5, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,350
NECTARINE TREE

Robert E. Pinkerton, 4445 Avenue 416, Reedley, Calif. 93654

Filed Oct. 20, 1971, Ser. No. 191,043

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—41 **1 Claim**

A large to medium size nectarine tree which is vigorous, upright to spreading, and a regular and productive to very productive bearer of large, uniform, symmetrical, globose, clingstone fruit which ripens about ten days later than the Gold King nectarine (United States Plant Patent No. 1,424); the fruit ripening evenly, being glossy, and having yellow skin substantially overspread with red at maturity, and firm, crisp, meaty, yellow flesh, the surface of the pit cavity being red which streaks into the flesh.

3,351
ROSE PLANT

Samuel McGredy IV, Portadown, Northern Ireland, assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Mar. 3, 1971, Ser. No. 120,782

Claims priority, application Great Britain, Mar. 9, 1970, AFB/5/138

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—20 **1 Claim**

A hardy spreading bush rose of the floribunda class characterized primarily by striking color difference between margins and centers of the flower petals, the margins being distinctly pale, particularly where the plants are grown in areas of low light intensity, the plant being of the spreading type, thickly branched, displaying new leaves with an inconspicuous raised dark green area, the peduncles, although otherwise smooth, having a number of very small short stipitate glands.

3,352
AZALEA PLANT

Carl Pearlstein, San Francisco, Calif., assignor to Nurserymen's Exchange, Inc.

Filed May 4, 1970, Ser. No. 34,644

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—57 **1 Claim**

1. A new and distinct variety of azalea plant of the Belgian Indica class substantially as herein shown and described primarily characterized by: its vegetative similarity to "Improved Red Wing" of which it is a sport and by its Phlox Pink (H.C.C. 625/1).

3,353
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 31, 1971, Ser. No. 176,756

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of crysanthemum characterized particularly as to its uniqueness when compared to the cultivar Golden Belair by its more intense bronze flower color, particularly under high light and temperature conditions, higher flower crown and more formal flower form, three to four days earlier and more uniform response, and its 2 inch shorter habit; and characterized as to uniqueness when compared to the cultivar Bronze Belair by its more intense bronze color and better color retention under high light and high temperature conditions and during maturity of flower.

3,354
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffet, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed May 17, 1971, Ser. No. 144,191

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct variety of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Carillon by its ½" larger flowers; greater flower production, averaging 4 more flowers per stem; 3"–4" more vigor; stipules formation; a smoother lavender color with less fading under high temperature, high light conditions; a broader, less sharply pointed petal; and by its larger, darker, less indented, and serrated foliage with less prominent ribs and veins.

PATENTS

GRANTED JUNE 5, 1973

GENERAL AND MECHANICAL

3,736,595
PROTECTIVE SUIT

Oteried Siegmann, Buntweg 17a, Hannover-Kirchrode, Germany

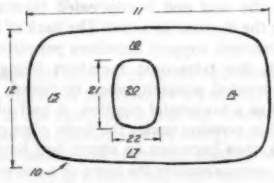
Filed Aug. 30, 1971, Ser. No. 175,904
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 7 Claims

A protective suit worn to prevent spread of infectious agents comprising a coat and hood made from disposable paper and having closures consisting of pressure sensitive adhesive strips which bond together the overlapping edges of the openings which permit donning the suit. The adhesive strips are protected with foil until it is desired to close the openings after donning.

3,736,596
DRESS AND METHOD OF DRESSING

Karen Louise Rowden Milne, 4118 West 11th Avenue, Vancouver, British Columbia, Canada

Filed Mar. 21, 1972, Ser. No. 236,653
Int. Cl. A41d *1/22*
U.S. Cl. 2—74 10 Claims

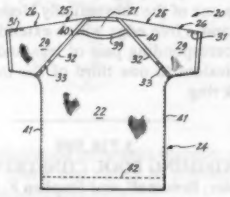


A one-piece dress being a generally rectangular blank of fabric with a generally rectangular body receiving opening forming a front skirt panel and a rear cape panel connected by spaced side straps. Dressing method includes positioning body in body-receiving opening, facing skirt panel, and pulling skirt panel about waist by crossing straps at back. Cape panel is passed over head and straps recrossed at front, before passing cape panel again over the head so that the cape falls about the shoulders. Opening has rounded corners and a perimeter sufficient to enable the cape panel to be passed over the head according to method, yet being sufficient to snuggly fit the body.

3,736,597
PULL-OVER INFANT'S GARMENT

William Walter Artzt, 116 East 68 St., New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,148
Int. Cl. A41b *9/06*
U.S. Cl. 2—111 8 Claims

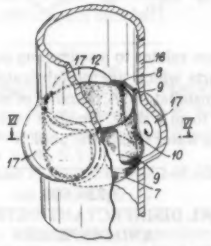


A pull-over garment, particularly for infants, comprises front and back body panels joined to each other along the sides of the garment to define a body portion with a central neck opening at the top, and shoulder and sleeve portions extending laterally outward from each side of the neck opening and including a back part joined to the back body panel, an outer front part joined to the back part along the top of the shoulder and sleeve portions and along the bottom of the sleeve portion and having an inner edge sloping downwardly from the neck opening to the bottom of the sleeve portion, and an inner front part joined to the front body panel and underlying said outer front part, the inner front part having an upper edge extending substantially along the top of the shoulder and sleeve portions and being joined to the outer front part along only the outer end portion of such upper edge and along only the lower end portion of the mentioned downwardly sloping edge, so that the neck opening can be expanded for ease in application of the garment to an infant and is restored to its normal configuration by outward pulling of the tops of the sleeves.

3,736,598
PROSTHETIC CARDIAC VALVE

Brian John Bellhouse, The Ridings, Islip near Oxford, and Francis Hewitt Bellhouse, 34 Hill Rise, Old Woodstock, both of England

Filed June 10, 1971, Ser. No. 151,740
Int. Cl. A61f *1/22*; F16k *15/14*
U.S. Cl. 3—1 6 Claims



A prosthetic aortic or pulmonary valve for permanent cardiac implantation into the natural valve root having a

framework which is made from sheet woven of knitted textile fabric material and which consists of an annular ring with three equiangularly spaced projecting legs which extend substantially parallel to one another in the axial direction from the ring. Each leg is folded about its longitudinal center line so that the side edges of the legs form radially outwardly projecting flanges, the adjacent flanges of adjacent legs merging through curves into the portion of the ring lying between those two legs whereby a substantially U-shaped continuous outwardly projecting flange is formed between each pair of the three pairs of adjacent legs. The framework supports three separate cusps made of thin flexible impermeable sheet material, each cusp having a substantially U-shaped edge which overlies one of the substantially U-shaped flanges and is bonded to it, and a free edge which extends between the free ends of the corresponding pair of legs and has a length substantially equivalent to one third of the internal diameter of the framework ring.

3,736,599

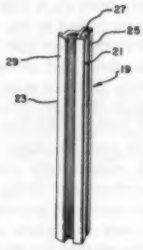
SWIMMING POOL CONSTRUCTION

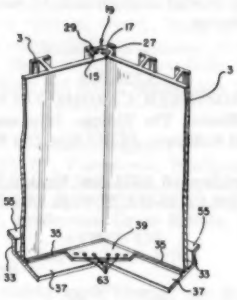
Frank L. Kessler, Broomall, and Stephen F. Kendall, Penn Valley, both of Pa., assignors to Ben Carson, Bala Cynwyd, Pa.

Filed Mar. 25, 1971, Ser. No. 128,078

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **3 Claims**





The disclosure relates to a swimming pool which is made of component parts which are prefabricated and assembled at the site of the installation. A plurality of side wall members are interlocked to form a shell, the shell receiving a flexible liner which holds the water within the pool.

3,736,600

TOILET-BOWL DISINFECTANT-DETERGENT HOLDER AND DISPENSER

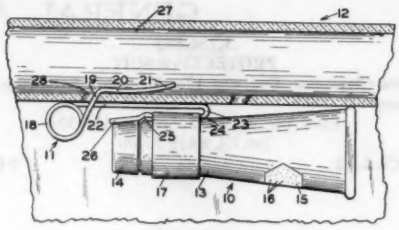
James M. Drinkwater, 950 E. Lakeside Drive, Fayetteville, Ark.

Filed Dec. 20, 1971, Ser. No. 209,819

Int. Cl. E03d *9/03*

U.S. Cl. 4—231 **8 Claims**

A collapsible-wall tube-type dispenser containing a fluid disinfectant and detergent composition, removably disposed in the flush-water path of a toilet bowl, releases no fluid to flush water impinging on the tube, discharge of fluid being effected only by manually pressing an object against the tube wall. The dispenser holder is adapted for use in bowls having inclined vortex-type flush-water inlets.



3,736,601

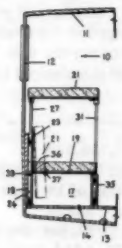
CONVERTIBLE SOFA

George Henry Wiseman Riches, 170 Roehampton Avenue, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 094,497, Dec. 2, 1970. This application Oct. 12, 1971, Ser. No. 188,327

Int. Cl. A47c *17/10, 17/14*

U.S. Cl. 5—9 R **10 Claims**



A couch which by day serves as a seat for several people and can be converted into an upper and lower bed by night. The back of the couch is constructed with a portion which telescopes into the seat and is concealed therein when the couch is used in the daytime as a seat. The back of the couch is mounted on telescopic support members permitting the back to be elevated, the telescopic members being releasably locked in the elevated position, when so raised, the back is then swung out to a horizontal position. A pair of rigid posts are then placed in position under the front edge of the raised back. The back thus becomes an upper bed having a width substantially or approximately the same as a conventional single bed.

3,736,602

ADJUSTABLE WIDTH KING SIZE BED FRAMES

Richard A. Miller, Bedford Hts., Ohio, assignor to Rusco Industries, Inc., Los Angeles, Calif.

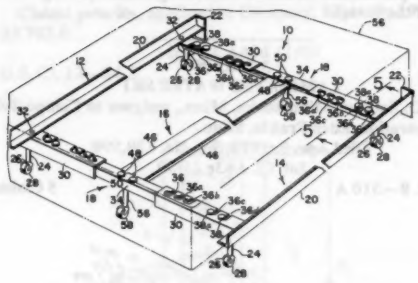
Filed Nov. 4, 1971, Ser. No. 195,644

Int. Cl. A47c *19/12*

U.S. Cl. 5—176 R **6 Claims**

A bed frame which is assembled without the use of nuts and bolts or other loose fastening members. The frame consists of a pair of side rails, cross rail subassemblies, and a center support subassembly. Each cross rail subassembly consists of a pair of end cross rail sections which are connected to the respective side rails and a center cross rail section. The center

cross rail sections have pairs of upwardly projecting shouldered rivets at each end and L-shaped notches or slots are provided in the end cross rail sections for receiving the rivets.



Multiple pairs of the notches are provided so that the frame may be adjusted for different widths of beds. The center cross rail sections are secured to the center support subassembly by a pair of headed rivets engaging slots in the center cross rail.

3,736,603

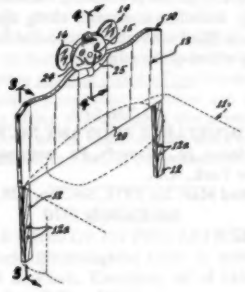
CHILD'S PLUSH FIGURE HEADBOARD

Lillian Rothman, 7002 Forbes Avenue, Van Nuys, Calif.

Filed Mar. 17, 1972, Ser. No. 235,557

Int. Cl. A47c *21/00*

U.S. Cl. 5—317 R **7 Claims**



A headboard for a child or youth bed incorporating an integral plush figure in the form of an animal or the like. The projections of the figure portion of the headborad such as the head and ears, are flexibly and resiliently mounted to the solid portion of the headboard to prevent damage to the headboard or injury to a child as a result of rough handling or intentional attempts of destruction by a child.

3,736,604

FLUID FILLED MATTRESS

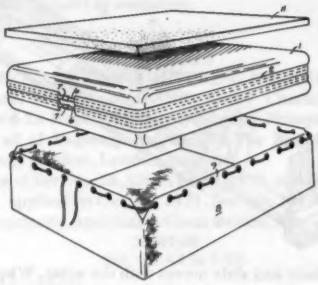
Robert N. Carson, Jr., San Rafael, Calif., assignor to Carson Manufacturing Co., San Rafael, Calif.

Filed Mar. 1, 1971, Ser. No. 119,706

Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **11 Claims**

A fluid filled mattress surrounded by a protective sheet with a fireproof sheet on the top held in place by a cover sheet, provided with means to form a flexible framework adjustable to suitable pressures of the fluid in the mattress; also provided with flap means inside of the mattress dividing it into compartments, the flap means being either perforated or freely swingable so as to resist excessive motion of the body or fluid within



the mattress when displaced by weight thereon; also securing means to hold the lining and cover in position in a box in which the fluid mattress is confined.

3,736,605

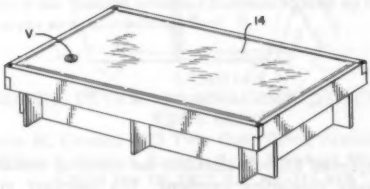
DEVICE

Nicholas L. Klein, Jr., Dayton, Ohio, assignor to Louis Capelle, Dayton, Ohio

Filed May 24, 1971, Ser. No. 146,311

Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **5 Claims**



This disclosure is directed to a fluid envelope, e.g., water bed, frame comprised of an underlying pedestal assembly, an intermediately located platform upon which the fluid envelope rests and an upper rail section containing a plurality of side rails and end rails secured together at their ends by a plurality of common fastening means. The underlying pedestal section is comprised of two or more notched support members having positioned thereon in mating fashion a plurality of pedestal cross members whose notches fit with the notches provided in the pedestal support members.

3,736,606

TWISTED PAIR UNTWISTING AND STRIPPING TOOL

John F. Raum, Winston-Salem, and Henry R. Tillman, Forsyth, both of N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

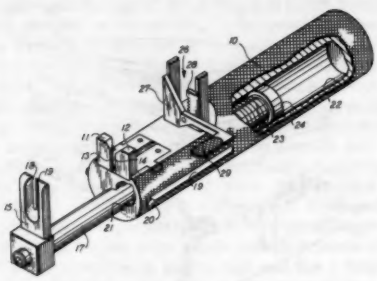
Filed June 1, 1971, Ser. No. 148,682

Int. Cl. H02g *1/12*

U.S. Cl. 7—14.1 R **4 Claims**

A tool has a pair of untwisting projections and a spring biased slide with an insulation stripping blade. The projections have rounded edges forming a slot for untwisting a twisted pair of wires when the wires are pulled therethrough. The bias of the slide positions the stripping blade adjacent to the untwisting projections with the untwisting projections aligned with the stripping blade in position to receive the ends of the

twisted pair of wires. During first movement of the wires relative to the tool, the ends of the wires are untwisted while the

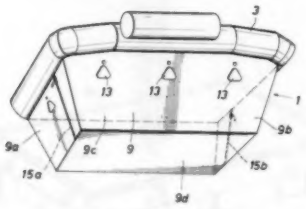


stripping blade and slide moves with the wires. When the slide engages a stop, continued movement of the wires strips the insulation from the ends of the wires.

3,736,607
LIFE RAFT STABILIZER

Matthew I. Radnofsky, Seabrook; James H. Barnett, Jr., Alvin; Floyd L. Harrison, and Ralph J. Marak, both of Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1971, Ser. No. 203,405
Int. Cl. B63b *7/08, 39/02*
U.S. Cl. 9—2 A **6 Claims**

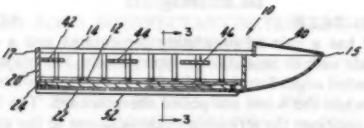


An improved life raft stabilizer for reducing rocking and substantially precluding capsizing. The stabilizer may be removably attached to the raft and is defined by flexible side walls which extend a considerable depth downwardly to one another in the water. The side walls, in conjunction with the floor of the raft, form a ballast enclosure. A weight is disposed in the bottom of the enclosure and water port means are provided in the walls thereof. Placement of the stabilizer in the water allows the weighted bottom to sink, producing submerged deployment thereof and permitting water to enter the enclosure through the port means, thus forming a ballast for the raft.

3,736,608
WATER VESSEL HAVING DOUBLE HULL

Stanley Whitehead, 629 West Baltimore, Detroit, Mich.

Filed Mar. 29, 1971, Ser. No. 128,914
Int. Cl. B63b *3/00, 5/00*
U.S. Cl. 9—6 **3 Claims**

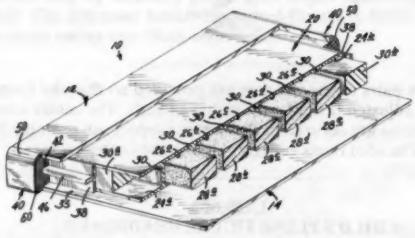


A water vessel having a double hull, including a main bottom with side walls extending upwardly from the edges of the main bottom and provided with a plurality of longitudinally and laterally extending partitions on which an auxiliary bottom is attached to form a plurality of water retaining pockets opening to the sides of the vessel. One of the pockets formed between the main bottom and the auxiliary bottom of the vessel is so partitioned as to form a water pocket opening to the stern of the vessel.

3,736,609
LAMINATED WATER SKI

David O. Saucier, Minnetonka, Minn., assignor to Compo-Tek Corporation, Eden Prairie, Minn.

Filed Apr. 5, 1971, Ser. No. 130,990
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 A **5 Claims**

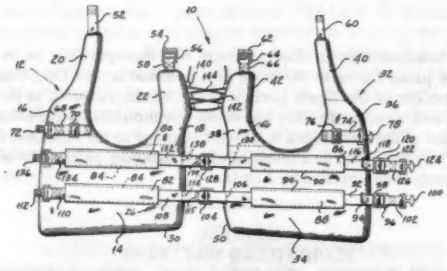


A laminated water ski having mechanical vibration dampening surfaces in the form of unidirectional fiberglass skin layers and a neoprene rubber edging extending about the periphery of the ski. The fiberglass skin layers are bonded to the top and bottom surfaces of an extruded center core having a plurality of laterally spaced, longitudinally extending tunnels filled with a buoyant plastic foam for preventing buckling of the ski. The rubber edging includes a groove along the inner surface thereof which is filled with epoxy resin for further increasing the dampening effect of the edging.

3,736,610
ADJUSTABLE BUOYANT JACKET

Leonard P. Frieder, Jr., Waverly, Pa., assignor to Gentex Corportion, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,347
Int. Cl. B63c *9/10*
U.S. Cl. 9—342 **14 Claims**

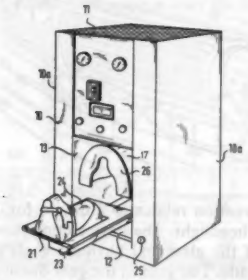


An adjustable buoyant jacket made up of right-hand and left-hand buoyant bodies each of which has a front edge and a back edge, the jacket being provided with manually operable adjusting means accessible at the front of the jacket for concomitantly adjusting the distance between the front edges and the distance between the rear edges in the waist region without disturbing the positions of the buoyant bodies on the person of the wearer, together with adjustable means for connecting the back edges in the shoulder region thereof.

3,736,611
APPARATUS FOR PRESSING TREATMENT OF SHOE UPPERS

Egon Dreibholz, 56 Wuppertal-Barmen, Germany, assignor to Firma Frobana, 56 Wuppertal-Barmen, Germany

Filed Sept. 9, 1971, Ser. No. 179,038
Claims priority, application Germany, Sept. 10, 1970, G 70 33 703.0
Int. Cl. A43d *11/00*
U.S. Cl. 12—54.2 4 Claims

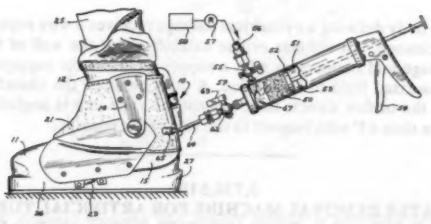


An apparatus for pressing treatment of a shoe upper mounted on a last, which comprises a housing partly open on the service side and covered with a perforated sheet as well as closed all round and heat-protected on both sides. A movable shoe last includes a drive-and-control-device. A pressing cushion includes drive- and controlmembers, liftable from and lowerable to the shoe last. The shoe last and the pressing cushion are disposed in the housing. A cover plate has an insert opening corresponding with the configuration of the shoe last seen in vertical direction covering the pressing cushion within the range of its rearward end face. An insert device operates in a horizontal plane transmitting the shoe last from a ready position in front of the housing into a working position below the pressing cushion inside of the housing and reversing the same. Electric-pneumatic controls are provided which self-control the lifting movement of the pressing cushion; the driving movement of the insert device and the engagement of the pressing cushion in a timely dependent manner.

3,736,612
METHOD OF FITTING SKI BOOTS

Donald R. Check, Bloomington; Gary B. Ader, Eden Prairie, and Edward A. Pauls, Excelsior, all of Minn., assignors to Bass Sports, Inc., Edina, Minn.

Filed Mar. 11, 1971, Ser. No. 123,360
Int. Cl. A43d *9/00*; A43b *00/00*
U.S. Cl. 12—142 P 15 Claims

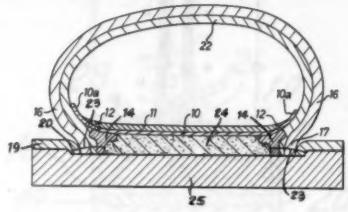


A method of fitting ski boots using a conformable material made up of separable small discrete particles covered with a film of a lubricating or liquid material. The material is fluidized with air under pressure for injecting the material into the pads, in order to fit closely to the foot and to insure a close fit in a short time. The apparatus includes a gun member which utilizes fluid under pressure that forms a turbulent mixing zone and discharges the material into the pad in a boot fitting, and which has means for advancing the bulk material into the mixing zone as necessary.

3,736,613
METHODS OF MANUFACTURING WELTED SHOES

John Tusa, Horndon-on-the-Hill; Leslie Charles Lawrence, Stanford-Le-Hope, and Stanley Norman Plampton, East Tilbury, all of England, assignors to The British Bata Shoe Company Limited, London, England

Division of Ser. No. 26,320, April 7, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,420
Claims priority, application Great Britain, May 14, 1969, 24697/69
Int. Cl. A43b *9/00*
U.S. Cl. 12—142 D 3 Claims

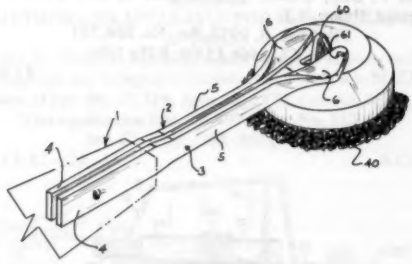


A method of manufacturing welted footwear in which a shaped board is temporarily secured to one side of a flexible insole prior to the securing of a lasted upper to the insole, the flexible insole being formed with extended marginal portions which in the finished article of footwear extend up the sides of the upper so as to cradle the foot.

3,736,614
ABRADING DEVICE FOR ATTACHMENT TO ELECTRIC KNIFE DRIVE

Sharon M. Crostic, 1423 Twin Oaks Drive, Arnold Mo., and William E. Froelich, Route 1, Box 8, Barnhart, Mo.

Filed Jan. 10, 1972, Ser. No. 216,658
Int. Cl. A47l *17/04*
U.S. Cl. 15—97 R 5 Claims

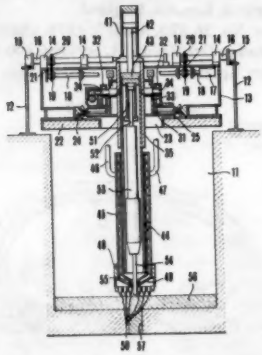


A portable power-driven abrading or scouring device has two arms adapted to be connected at one end to power means for reciprocating at least one of the arms with respect to the other, the arms having at their outer ends a pair of spaced pivot means, preferably in the form of balls. The pivot means are spaced laterally and are connected to an abrasive holder. When the pivot means are balls, the abrasive holder preferably is a block with sockets in which the balls are seated, to provide, within limits, two degrees of freedom.

3,736,615
SLAG REMOVING EQUIPMENT FOR HIGH TEMPERATURE FURNACES

Kozo Kumaki, Osaka, Japan, assignor to Nakamichi Kikai Co., Ltd.; Nichimen Co., Ltd. and Nippon Pneumatic Manufacturing Co., Osaka-shi, Osaka-fu, Japan

Filed June 8, 1971, Ser. No. 150,967
Int. Cl. C21d 9/70
U.S. Cl. 15—104.1 C 1 Claim

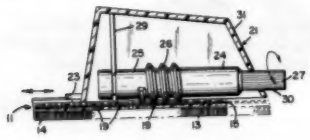


Slag removing equipment for removing slag from high temperature furnaces. The equipment has a power-driven casing mounted so as to be capable of travelling on the furnace. A power-driven rotary table is mounted on the casing so as to be capable of rotating horizontally, and a power-driven vertical cylindrical member is mounted on the rotary table so as to be capable of inclining. A power-driven movable cylinder is elevatably mounted on the cylindrical member, the movable cylinder being provided with collecting claws at the lower end thereof. A power-driven impact hammer is elevatably mounted inside the movable cylinder, and has an impact hammer provided with a chisel at the lower end thereof which is capable of extending out of and withdrawing into the lower ends of the collecting claws.

3,736,616
ADJUSTABLE PAD PAINTER

Donald P. Selp, Union, N.J., assignor to Red Devil Incorporated, Union, N.J.

Filed Feb. 8, 1972, Ser. No. 206,781
Int. Cl. A46b 15/00; B25g 1/04
U.S. Cl. 15—210 R 4 Claims

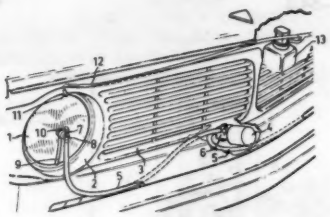


The paint applying pad of a pad painter is slideably coupled to a handle member by lateral flanges. Fixed spaced guides extend outwardly of the handle parallel to the pad. The pad may be longitudinally displaced with respect to the ends of the guides by means of a worm rotatably carried within the handle member and a series of spaced slots in the top of the pad with which the worm is in mesh.

3,736,617
DEVICE FOR CLEANING THE GLASS ON VEHICLE HEADLIGHTS

Dan Ragnar Ahlen, Ockero, Sweden, assignor to Aktiebolaget Volvo, Gothenburg, Sweden

Filed July 19, 1971, Ser. No. 163,875
Int. Cl. B60s 1/20, 1/44
U.S. Cl. 15—250.22 4 Claims

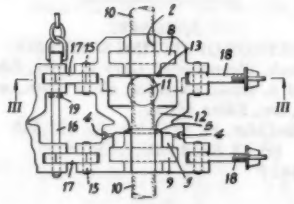


The present invention relates to a device for cleaning the glass of a vehicle headlight. The device comprises a gear box placed in front of the glass and having a shaft supporting a rotatable wiper blade. The gear in the gear box is operated by a motor via a flexible cable. The device is chiefly characterized in that the motor is arranged to operate the cable at a high speed, that the worm gear in the gear box is arranged to provide in one step the reduction required to produce a speed of rotation suitable for the wiper blade, and that a stopper rotating synchronously with said wiper blade is provided to actuate the motor to stop said wiper blade in a predetermined fixed position. The shaft of the gear box is journalled in a boss, or the like, which is glued or otherwise secured on the outside of the glass.

3,736,618
TOOL FOR TREATING OR CLEANING WIRE ROPE

Samuel Terry Ramsey, 25, Victoria Road, Gorsleton, GT Yarmouth, Norfolk, England

Filed Mar. 24, 1971, Ser. No. 127,501
Int. Cl. A47l 5/38
U.S. Cl. 15—306 A 7 Claims



A body defining a cylindrical passage receives a wire rope to be cleaned. An annular orifice extends about the wall of the passage and cooperates with a supply chamber for supplying pressurized fluid to the orifice. A duct between the chamber and the orifice directs fluid against the rope and is angled at more than 45° with respect to the axis of the passage.

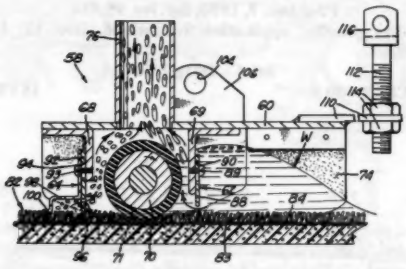
3,736,619
WATER REMOVAL MACHINE FOR ARTIFICIAL TURF

Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.

Filed Nov. 4, 1971, Ser. No. 195,790
Int. Cl. A47l 7/00
U.S. Cl. 15—340 8 Claims

A machine for removing standing water from artificial turf, comprising an automotive vehicle carrying air and water

pumps, air/water separation tank, nozzles, and associated equipment, and having a transverse water pick-up device including a roller that rolls on the turf and piles up a wave of water ahead of it. The roller is enclosed within a narrow, elongated housing having top, front and rear walls, and end plates, The bottom edge of the front wall just clears the turf and forms a narrow gap through which the piled up water flows into the housing ahead of the roller, where it is picked up by the vacuum suction and carried through a plurality of hoses to the tank. Here, the water is separated from the air and is pumped in a high-velocity jet to one side of the machine or the other, so that on successive passes over the turf, the machine



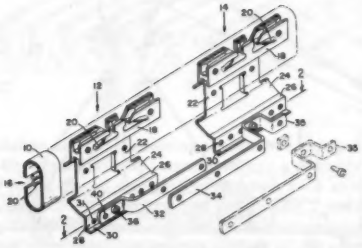
moves all of the water to one side of the playing field where it can be drained off. The bottom edge of the rear housing wall extends slightly down into the turf and bends the pile forwardly, then releases it to flip droplets of water into the air behind the rear wall, where they are picked up by the air stream and carried through openings in the rear wall into the housing and thence through the hoses into the tank. An apron extends rearwardly from the rear wall, forming a confined space behind the housing, into which water droplets are flipped up by the turf. The trailing bottom edge of the apron rests lightly on the top of the turf, causing air to be sucked under the bottom edge of the apron and through the turf, to help pick up any remaining water.

3,736,620

MASTER CARRIER FOR DRAPERY TRAVERSE ROD

John E. Williamson, West Barrington, R.I., assignor to Kenny Manufacturing Company, Warwick, R.I.

Filed Jan. 17, 1972, Ser. No. 218,171
Int. Cl. A47h *13/00*
U.S. Cl. 16—87.4 R **1 Claim**



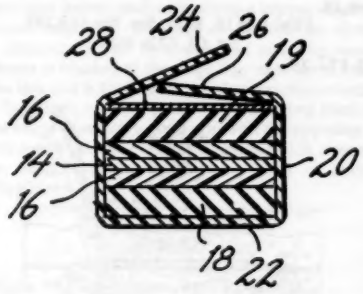
A drapery traverse rod master carrier is provided with a detachable drapery support arm adapted for attachment at various locations to a mounting portion on a master carrier, and for interchange from right to left to permit either one of a pair of master carriers to carry the outer, overlapping margin of the drapery. The mounting portion on the master carrier has holes spaced along its length. The support arm may be attached with a screw and nut through any one of the holes. Flanges extending at an angle from the mounting portion serve to keep the support arm in fixed orientation and prevent the nut from rotating. The support arm which carries the overlapping margin of the drapery is provided with two arm portions, one of which may be called primary and the other secondary. The primary arm supports the overlapping margin while the secondary arm is spaced laterally of the primary arm at the same level and stepped rearwardly thereof to accommodate a gradual angle between the general plane of the drapery and the overlapping marginal portion.

3,736,621

SHEATHED SOFT-FEEL HANDLE AND METHOD OF MAKING SAME

Marton T. Szabo, Camden, N.J., assignor to Philadelphia Handle Company, Inc., Camden, N.J.

Filed Aug. 4, 1971, Ser. No. 168,828
Int. Cl. A47b *95/02*
U.S. Cl. 16—116 **10 Claims**



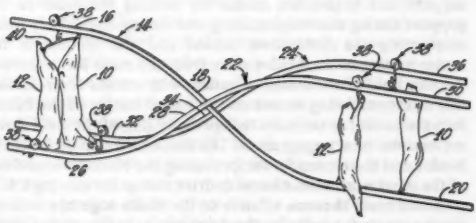
A soft-feel handgrip for a handle construction in which cushioning members for the top and bottom of the grip are provided with a flexible conductive member on the outer face of the bottom cushioning member and an open thermoplastic sheath wrapped around the members to provide overlapped sheath ends directly against the conductive member whereby the overlapped sheath ends can be effectively sealed dielectrically. The handgrip may include non-metallic fillers or stiffeners and/or a spring metal bar spaced from the overlapped sheath ends by the bottom cushioning member.

3,736,622

METHOD AND APPARATUS FOR SLAUGHTERING ANIMALS

Charles H. Wallace, Sylvania, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 47,216, June 18, 1970, Pat. No. 3,657,770.
This application Dec. 29, 1971, Ser. No. 213,488
Int. Cl. A22c *7/00*; B65g *47/24*
U.S. Cl. 17—24 **6 Claims**



An animal is slaughtered in a head-down position and is subsequently inverted after bleeding to place the hindquarters

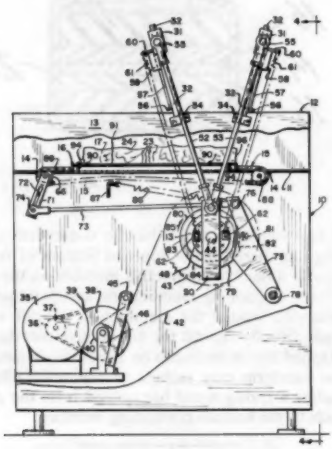
down while the animal muscles are still flaccid. The carcass is maintained in the latter position until rigor mortis sets in, the carcass is thoroughly chilled, or both. By positioning the animal carcass with the hindquarters down and with the animal muscles flaccid, the meat drifts or settles downwardly toward the hindquarters. Consequently, the meat is distributed more toward the hindquarters of the animal carcass where the more expensive cuts are located. Higher monetary value of the carcass is thus achieved. To increase the movement of the muscle or meat toward the hindquarters, the carcass can be subjected to vibrations or shock in addition to the force of gravity. Also, this movement of the meat can be increased by subjecting the carcass to centrifugal force with the animal rotated about an axis which is perpendicular to the longitudinal extent of the carcass and is located nearer to the forefeet than the hind feet.

3,736,623

MEAT TENDERIZER APPARATUS

James J. O'Malley, and Murray C. Strickland, both of Granada Hills, Calif., assignors to Hollymatic Corporation, Park Forest, Ill.

Filed July 16, 1971, Ser. No. 163,288
Int. Cl. A22c 9/00
U.S. Cl. 17—25 **18 Claims**



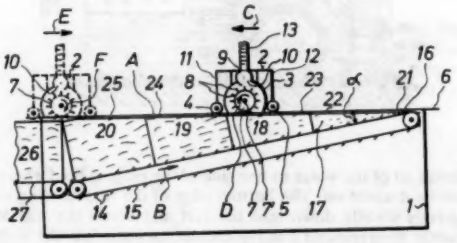
Apparatus for tenderizing meat comprising a support for the meat, a plurality of elongated cutting elements each comprising a blade with a cutting edge end with the blades being in two sets of a plurality of blades each and with each set arranged at an acute angle to the support and to each other and being reciprocable at their acute angles into and from meat held by the support to sever fibers and other severable toughening portions of the meat. The disclosure also includes an apparatus for tenderizing meat comprising a plurality of cutting elements reciprocable into and out of meat held on a support and hold-down means for holding the meat on the support during the reciprocating and means operatively interconnecting the hold-down means and the blades on the reciprocating of the blades away from the meat for withdrawing the hold-down means together with means for releasing this interconnecting means on the reciprocating of the blades into the meat for unrestricted spring urging of the hold-down means into meat engagement. The disclosure also includes the blades and the means for reciprocating the blades into and out of the meat in combination with drive means for moving a support and meat thereon relative to the blade together with indexing means for indexing the drive means in successive increments of movement comprising a reciprocable ratchet connected to the drive means for indexing on movement of the reciprocable ratchet in one direction. The disclosure also includes an apparatus for tenderizing meat including a support for the meat, a drive means for moving the support and thus the meat comprising a longitudinally extensive member such as a link chain and securing means releasably connecting the support and the extensive member for moving the support along with the extensive member.

3,736,624

BALE REDUCING APPARATUS AND METHOD OF REDUCING FIBER BALES

Hans Rudolf Alt, Elgg; Christian Just, and Rudolf Wildbolz, both of Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Dec. 7, 1970, Ser. No. 95,454
Claims priority, application Switzerland, Dec. 12, 1969, 18498/69
Int. Cl. D01g 7/06
U.S. Cl. 19—80 R **18 Claims**



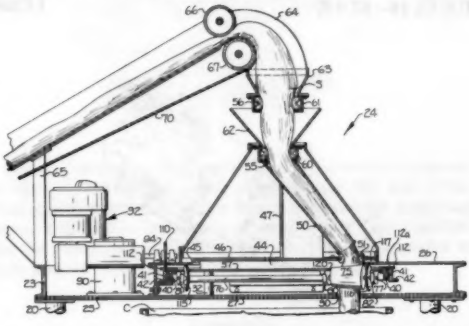
A number of bales are opened by passing the fiber removing device over the surfaces of consecutive bales in a reciprocating manner. The bales are fed to the reducing plane at an angle by the supply means so that a continuous opening and blending operation is carried out in a single machine.

3,736,625

APPARATUS FOR COILING TEXTILE SLIVER

Herman S. Johns, Patterson, N.C., assignor to Wellman Industries, Inc., Johnsonville, S.C.

Continuation-in-part of Ser. No. 46,866, June 17, 1970, abandoned. This application Dec. 18, 1970, Ser. No. 99,352
Int. Cl. B65h 54/80
U.S. Cl. 19—159 R **8 Claims**



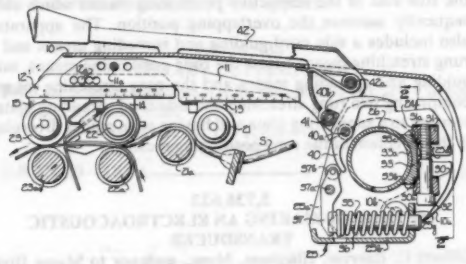
Apparatus for coiling sliver through a coiler head, in which the sliver is guided downwardly into and through an inclined tube rotating on a substantially vertical axis, and the sliver is advanced through the tube by nippingly engaging and applying a pulling force to the sliver at a point adjacent the lower end of the inclined tube. Further, the tube is tapered to form an inclined converging passage which progressively compacts the sliver in its course through the tube.

3,736,626

SUPPORT MEANS FOR TOP ROLL CARRIER ARM OF TEXTILE DRAFTING UNIT

Stefan Staneff, Herzongenaurach, Germany, assignor to Industriewerk Schaeffler, OHG, Herzongenaurach, Germany

Filed June 16, 1971, Ser. No. 153,616
Int. Cl. D01h 5/56
U.S. Cl. 19—295 7 Claims



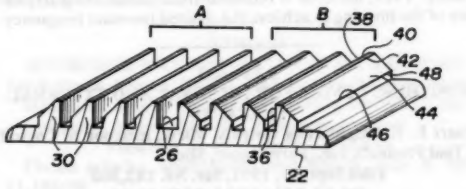
A bracket for pivotally supporting the top roll carrier arm of a loading system for a drafting unit includes spaced sidewall members provided with openings for mounting the same on a shaft positioned rearwardly of the drafting unit. First and second bridging elements are carried by and extend across the space between the sidewall members, and a clamping block is adapted to engage the shaft and extends between the bridging elements, with means being provided for cooperating with the bridging elements to pull the same toward each other, and at least one of the bridging elements and the adjacent portion of the clamping block are provided with cooperating cam surfaces thereon tending to force the block inwardly away from the outer edges of the sidewall members when the bridging elements are pulled toward each other so as to clamp the bracket on the shaft extending therethrough.

3,736,627

CONNECTOR

Charles W. Sosinski, Linden, N.J., assignor to Thomas Betts Corporation, Elizabeth, N.J.

Filed Nov. 2, 1971, Ser. No. 194,890
Int. Cl. B65d 63/06; H01r 5/08
U.S. Cl. 24—23 W 12 Claims



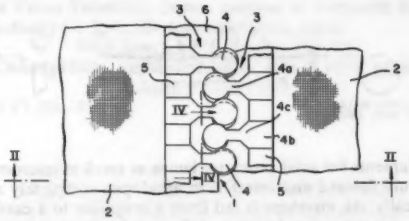
An insulation and oxide piercing connector employable, for example, for simultaneously interconnecting a plurality of insulated or oxide coated electrical conductors such as magnet wire, flat conductor, or the like, and comprising a plurality of selectively contoured, multi-surfaced, deflectable ridges suitable oriented on at least one interior surface of the connector and proportioned to engage, pierce, and be deflectably locked within the conductors as the connector is crimped thereabout. The ridges may be either straight or curved and formed to cross-sectionally define, alternatively, a generally truncated right triangle, or selective variations thereof, and may be juxtapositionally arranged in either similarly or oppositely facing groups or pairs. Coupling means may be provided for attaching the connector to a further connector or support member.

3,736,628

STRINGER HAVING BONDED COUPLING ELEMENT

Harry Hansen, 2500 Kopenhagen-Valby, Denmark, assignor to Lysta A/S, Kopenhagen-Valby, Denmark

Filed Feb. 10, 1971, Ser. No. 114,331
Claims priority, application Germany, Feb. 14, 1970, P 20 06 823.9
Int. Cl. A44b 19/14, 19/32
U.S. Cl. 24—205.1 5 Claims



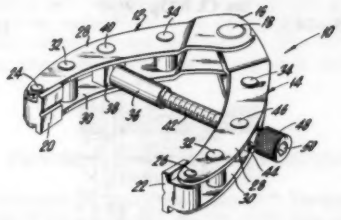
A stringer for an "invisible" or concealed slide fastener has a pair of stringer halves each comprising a support tape with a doubled-over edge flap to which is bonded an elongated coupling element formed by a series of coupling members. Each element is bonded to the edge flap right up to the edge fold and to this end is formed with a planar surface containing the edge flap. Each member comprises a coupling head of sufficient thickness to ensure a good grip with the opposing members, and a much thinner connecting piece which connects its respective head with the neighboring head to make the fastener flexible.

3,736,629

CLAMPING DEVICE

John B. Blake, 103 Oak Avenue, Park Ridge, N.J.

Filed Mar. 16, 1971, Ser. No. 124,676
Int. Cl. A44b 21/00
U.S. Cl. 24—248 SA 9 Claims

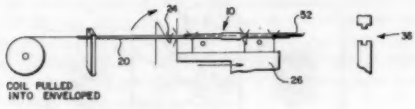


A clamping device includes two, preferably curved, arms which are pivotally connected together at an apex and which may be shifted inwardly and outwardly by means of a force applying threaded sleeve and screw member which are pivotally connected to the respective arm portions. The sleeve member is mounted on a block which is pivoted to one of the arms and a threaded spindle or screw member is passed through a block which is pivoted to the other arm and engages within the sleeve member. The outer ends of each arm includes clamping jaws which are shifted with the arms inwardly or outwardly in order to provide a clamping action by rotation of the screw relative to the sleeve member. At least one of the arms may pivot not only about the pivotal connection at the apex of the two arms but also about the pivot of either of the threaded sleeve or the threaded spindle block supports which are arranged intermediate in length of the respective arm. A final tightening clamping action may be obtained by means of an eccentric portion of the pivot for the apex of the two arms which has the effect of shifting one end of one arm at the location at the apex in a direction outwardly so that it pivots about its intermediate connection to the force applying sleeve or spindle member.

3,736,630
APPARATUS AND METHODS FOR MAKING MINIATURE INCANDESCENT LAMPS AND THE LIKE

Donald J. Belknap, Takoma Park, Md., assignor to Nelson H. Shapiro, Rockville, Md., and Milton M. Field, Alexandria, Va., part interest to each

Filed July 31, 1969, Ser. No. 846,466
Int. Cl. H01j *9/48*
U.S. Cl. 29—25.2 **33 Claims**

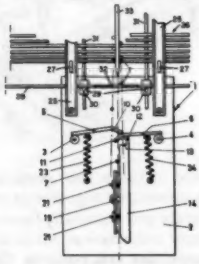


Filaments for axial geometry lamps as small as miniature are formed and inserted in envelopes completely automatically. An envelope is fed from a magazine to a carriage; the carriage is moved to thread the envelope over a length of filament wire; a clamp engages the end of the filament wire projecting from the envelope and draws it past a winding assembly; a filament coil is wound and detached from the winding assembly; the envelope carriage moves in reverse to draw the filament coil into the envelope; the filament coil is separated from the supply of filament wire; and the envelope containing the filament is unloaded from the carriage.

3,736,631
LADDER MECHANISM FOR AN ASSEMBLING APPARATUS FOR THE MANUFACTURE OF COMPLETELY OR PARTLY FINISHED PACKAGES OF SLATS FOR VENETIAN BLINDS

Gerardus Hendrikus Edixhoven, Voorschoten, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Curacao, Netherlands Antilles

Filed Aug. 26, 1971, Ser. No. 175,151
Claims priority, application Netherlands, Sept. 4, 1970, 7013154
Int. Cl. B23p *19/04*
U.S. Cl. 29—24.5 **10 Claims**

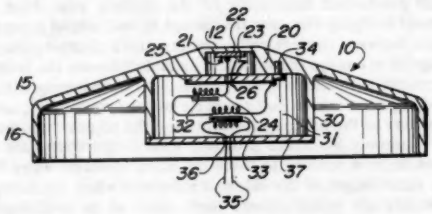


The application discloses a ladder mechanism for an assembling apparatus for the manufacture of at least partly finished packages of slats for venetian blinds of the type equipped with ladders comprising side cords and rungs therebetween and with means for lifting the ladders, said mechanism comprising movable means for directing rungs of a ladder to be placed alternately on one side and on the other side of the plane of the ladder, said movable means comprising two hinged rung positioning means such as a plate, brace and the like, each having a free end for cooperating with the rungs of a ladder, said free ends, when being in the inoperative position, being directed toward one another and overlapping one another as well as the plane of supply of the ladder in question, the rung positioning means being arranged and embodied such that during the operation of the assembling apparatus a rung always comes into contact with the free end of one of the positioning means and takes along said free end simultaneously with the overlapping free end of the second positioning means in its subsequent movement from the receiving position, said contact causing a lateral displacement of the rung, and that during the continued movement first the overlapping of the free end of the second positioning means is removed and said free end assumes its receiving position for cooperation with the next rung, and thereafter the first-mentioned rung is released from the free end of the respective positioning means which subsequently assumes the overlapping position. The apparatus also includes a side cord guiding and spreading means and a rung stretching means below the rung positioning means, said guiding and spreading means and the rung stretching means comprising two rung stretching and side cord spreading plates secured to a supporting plate and having edge guides diverging in the direction of the rung positioning means.

3,736,632
METHOD OF MAKING AN ELECTROACOUSTIC TRANSDUCER

Gilbert C. Barrow, Hingham, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Continuation of Ser. No. 866,785, Sept. 16, 1969, abandoned. This application Mar. 18, 1971, Ser. No. 125,880
Int. Cl. B01j *17/00*; H04r *17/00*
U.S. Cl. 29—25.35 **9 Claims**

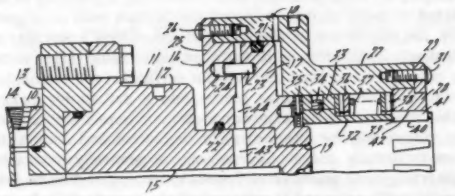


The invention provides a low cost electroacoustic transducer. The transducer housing has incorporated into its rear surface, a counterbored or cavity section opposing a flat portion on the outside surface of the housing. This construction results in a clamped vibratile disk to which a piezoelectric ceramic disk is attached. In addition, the invention includes a low cost method for adjusting the resonant frequency. First, the resonant frequency of the structure is measured after assembly. Then, material is removed from the external flat surface of the housing to achieve the desired resonant frequency.

3,736,633
FINISHING DEVICE FOR INTERNAL AND EXTERNAL SURFACES

Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc., Farmington, Mich.

Filed Sept. 21, 1971, Ser. No. 182,360
Int. Cl. B21c *37/30*; B24b *39/00*
U.S. Cl. 29—90 R **8 Claims**



The device has an arbor which is driven in rotation for driving a plurality of truncated conical rollers mounted in a cage

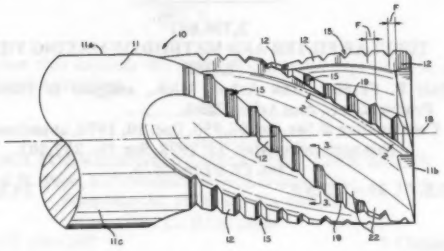
with internal or external lines of contact with a cylindrical or flat surface. Fluid is delivered through the arbor to a ram having a cylinder element and piston element which are movable relative to each other by the fluid and returned to initial position by spring means for advancing and retracting the rollers. The cage for the rollers is secured to one of the elements while the mandrel or race is secured to the other element so that one is movable relative to the other for increasing or decreasing the diameter on which the rollers operate.

3,736,634

ROTARY CUTTING TOOL

John R. Sonnie, Eastlake, Ohio, assignor to HiCarb Corporation, Cleveland, Ohio

Filed Mar. 17, 1971, Ser. No. 125,166
Int. Cl. B26d *11/12*
U.S. Cl. 29—103 A **3 Claims**



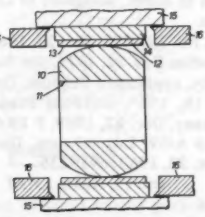
An end mill is provided which comprises a cylindrical body of solid carbide material having a plurality of parallel helical flutes in the outer surface thereof. Each of the flutes is provided with a plurality of notches having root lines perpendicular to the axis of the tool body, and the root line of each notch on one of the flutes is axially offset from the root line of a notch on the preceding flute a distance such that the offset notches axially overlap one another. The offset between notches of adjacent flutes is in the same direction as the hand of the helical flutes and preferably is approximately 0.015 inch. Further, the notches are defined by walls which are inclined approximately 40° relative to the axis of the tool. The tool structure provides for extremely small chips to be removed from a workpiece against which the tool is moved, whereby the tool can be operated at an extremely high spindle speed and with an extremely high linear tool feed rate to achieve heavy metal removal from a workpiece without chipping or breakage of the tool.

3,736,635

METHOD OF MAKING A BALL AND SOCKET JOINT

Hugh Frank Romer, Bushey, and Rodney Thomas Beazley, Maidstone, both of England, assignors to The Glacier Metal Company Limited, Wembley, Middlesex, England

Filed Mar. 8, 1971, Ser. No. 122,020
Claims priority, application Great Britain, Mar. 9, 1970, 11,186/70
Int. Cl. B21d *53/10*; B23p *11/00*
U.S. Cl. 29—149.5 B **5 Claims**



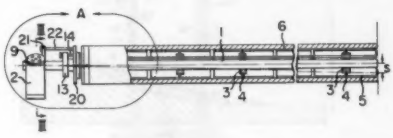
A method of making a ball and socket joint in which the ball is placed inside two co-axial cylindrical blanks which are then placed in a die which prevents outward expansion of the blanks. Force is then applied to the ends of the blanks to deform them to form the socket with the inner surface of the inner blank forming a bearing surface for the ball.

3,736,636

AN APPARATUS FOR ADJUSTING THE ALTITUDE OF THE CHORD OF AN EXPANDING ROLL

Kan Tawa, Takatsuki, Japan, assignor to Yamauchi Rubber Industry Co. Ltd., Hirakata-shi, Osaka, Japan

Filed June 3, 1971, Ser. No. 149,526
Claims priority, application Japan, June 5, 1970, 45/048612
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **3 Claims**



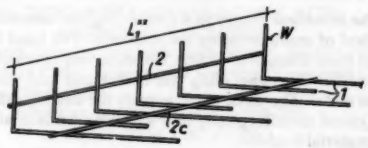
An apparatus for adjusting the altitude of a chord of an expanding roll characterized in comprising: a central shaft bent in an arc-shape with the amount of its radial deflection increasing successively toward the middle thereof with respect to an imaginary straight line corresponding to the axis of an unbent central shaft; a plurality of eccentric discs or bushes rotatably fitted around said shaft and being spaced lengthwise along the axis thereof, said bushes having the eccentricities increasing successively toward the middle of said central shaft; a plurality of sleeves in which said bushes are inserted and are rotatably supported therein by means of intermediate ball bearings; a rubber roll covering said sleeves and integrated therewith to form a single rotatable unit; a plurality of coupling members, each of which penetrates through each of said bushes respectively to intercouple therewith; a bearing journaling said central shaft so as to keep said central shaft fixed thereto and, in case of need, to permit said shaft to turn round therein; and a clutch means effecting, against said bush positioned adjacent to one axial end of said central shaft, an alternate engagement with said central shaft and with said bearing.

3,736,637

PROCESS FOR ASSEMBLING CONCRETE REINFORCEMENT

Georgi Oroschakoff, Simon-Denk-Gasse 7/7, Vienna, Austria

Division of Ser. No. 93,822, Nov. 30, 1970. This application Mar. 6, 1972, Ser. No. 231,865
Int. Cl. B23p *17/00, 15/12*
U.S. Cl. 29—155 R **2 Claims**



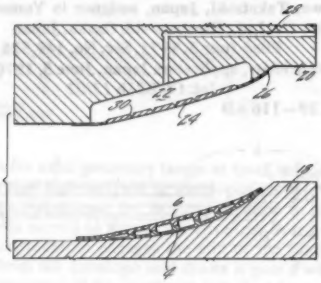
A method of assembling concrete reinforcement in which a pair of reinforcing sections is provided, each of which comprises orthogonal sets of rods. The two sections are pushed into one another so that one of the sets of rods of one section extends at an angle to the corresponding rods of the other section while the other sets of rods are parallel. Upon engagement of a rod of each of these other sets with a rod of the other set of the other section, the sections are turned into a position in which the rods of the first-mentioned sets of the two sections lie in a common plane.

3,736,638

METHOD FOR BONDING OPPOSED PARTS OF A HOLLOW ARTICLE TOGETHER

Hilton F. Stone, Jr., Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 7, 1971, Ser. No. 131,966
Int. Cl. B21k *3/04*; B23p *15/02, 15/04*
U.S. Cl. 29—156.8 **4 Claims**



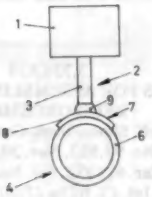
Apparatus for and method of bonding together the parts of a two part hollow article having projecting ribs on at least one part engaging cooperating surfaces on the other part and in which a high pressure is applied during the bonding operation to the portions of the parts that are in contact with one another without a corresponding pressure on the remainder of the surfaces of the article.

3,736,639

CONNECTING-ROD AND METHOD FOR ITS MANUFACTURE

Hans Ulrik Leffers, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 864,025, Oct. 6, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,945
Int. Cl. B23p *15/10*
U.S. Cl. 29—156.5 A **1 Claim**



The invention relates to a connecting rod assembly and to a method of manufacturing the assembly. The head for the rod is cut from a length of tubing. A saddle shaped member having a bore for the connecting rod is stamped and pressed from sheet metal. The three parts, namely the head, saddle and rod, are joined metallurgically in a soldering furnace after soldering material is added.

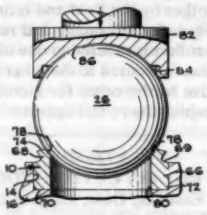
3,736,640

METHOD OF FORMING A METAL VALVE SEAT

Frederick E. Freiheit, East Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 15, 1970, Ser. No. 98,221
Int. Cl. B21k *1/20, 29/00*
U.S. Cl. 29—157.1 R **6 Claims**

A metal valve seat and method of forming the same which includes providing an annulus having a thick annular body and a thin neck defining a sealing end of the body. After the annulus has been mounted in the valve body, a ball is placed on the neck and an impact force is applied to the ball thereby deforming the neck and forming an annular concave sealing surface which conforms to the contacted curvature of the ball.

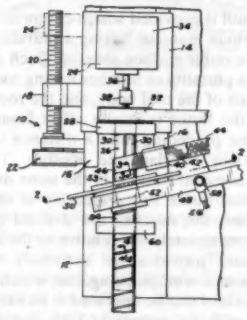


3,736,641

TUBULAR FILTER AND METHOD OF MAKING THE SAME

Dale P. Fosdick, Ann Arbor, Mich., assignor to Pittsfield Products, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 96,950, Dec. 10, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,503
Int. Cl. B23p *15/16*
U.S. Cl. 29—163.5 F **2 Claims**



A tubular reinforced filter comprising overlying strips of screen and perforated reinforcement helically wound and having adjacent windings bonded together, and the method of making the same comprising helically winding overlying strips of screen and perforated reinforcement and bonding adjacent windings together.

3,736,642

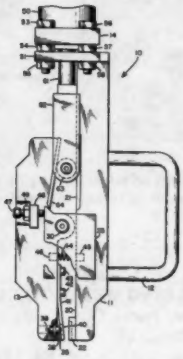
CONNECTION FORMING APPARATUS

James H. Miller, Minneapolis, and Edward G. Schaumburg, St. Paul, both of Minn., assignors to Gould, Inc., Mendota Heights, Minn.

Division of Ser. No. 786,285, Dec. 23, 1968, abandoned. This application Feb. 22, 1971, Ser. No. 117,665
Claims priority, application Belgium, Dec. 22, 1969, 83100; Canada, Sept. 15, 1969, 061963; France, Dec. 16, 1969, 6943606; Germany, Dec. 22, 1969, P 19 64 262.7; Italy, Dec. 20, 1969, 26110 A/69; Luxembourg, Dec. 19, 1969, 29124; Netherlands, Dec. 22, 1969, 6919236
Int. Cl. H01m *35/18*
U.S. Cl. 29—204 **7 Claims**

An apparatus for forming a tight sealing relation between intercell connector lugs of a storage battery. The apparatus

comprises a pair of jaw members that squeeze the intercell connector lugs of a storage battery together and a flaring



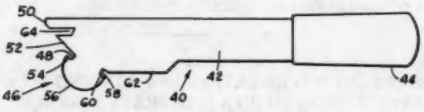
member that expands the intercell connector lugs to form a tight sealing relation.

3,736,643

TOOL FOR REMOVING CONCENTRIC KNOCKOUTS

Frank W. Pepe, 637 Prospect Drive, Lorship, Conn.

Filed May 20, 1971, Ser. No. 145,387
Int. Cl. B23p *19/04*
U.S. Cl. 29—267 **7 Claims**



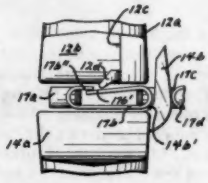
A tool for removing concentric ring knockouts from electrical conduit boxes of various construction after removal of the center disc knockout. The tool has opposed groove defining means set at an angle relative to each other and spaced apart by a distance less than a minimum predetermined diameter of a ring knockout to be removed, the groove defining means being adapted to alternately engage opposite points on the ring knockout in response to a backward and forward movement of the tool so as to fracture the knockout by a series of oscillatory movements about a pivot point until the points of connection of the ring knockout with the rest of the box fracture.

3,736,644

PLIERS

Oscar J. Simon, 5059 Tippecanoe Drive, Evansville, Ind.

Filed Oct. 6, 1971, Ser. No. 186,939
Int. Cl. B23p *19/04*; **B21l** *21/00*; **B25b** *27/22*
U.S. Cl. 29—268 **7 Claims**



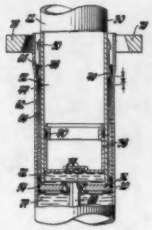
A specialized form of pliers having particular adaptability for use on a link bracelet as for adding, removing or replacing one or more links.

3,736,645

ASSEMBLY METHOD FOR HYDRAULIC ENERGY ABSORBERS

Wayne V. Fannin; Loren R. Gute, both of Dayton, and Wilbur J. Zimmerle, Bellbrook, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1971, Ser. No. 196,138
Int. Cl. B23p *17/00*
U.S. Cl. 29—422 **5 Claims**



An hydraulic energy absorber unit comprising telescopic cylinder and piston tubes defining variable volume liquid-filled chambers therein and adapted to absorb energy upon displacement from a rest or normal extended position to an inwardly telescoped position is assembled in a manner to have one of the variable volume chambers filled in the rest position of the unit with a predetermined quantity of reserve fluid transmitting to the remainder of the unit a preload force exerted by a spring chamber piston within the piston tube. The piston tube subassembly is loaded with a gas at an initial predetermined pressure prior to insertion thereof within the cylinder tube subassembly filled with liquid, such insertion being accomplished with the aid of a sealing ring on the piston tube which causes the latter to displace the predetermined quantity of fluid into the piston tube chamber and further pressurize the gas spring up to the final desired pressure, whereafter the piston and cylinder tube subassemblies are provided with a one-way limit stop preventing further extension of the unit from the rest or as-assembled normal extended position.

3,736,646

METHOD OF ATTACHING SURGICAL NEEDLES TO MULTIFILAMENT POLYGLYCOLIC ACID ABSORBABLE SUTURES

Edward Emil Schmitt, Norwalk, and Martin Epstein, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

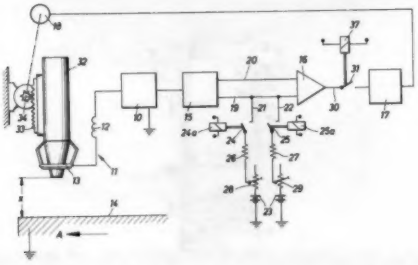
Filed Oct. 18, 1971, Ser. No. 190,290
Int. Cl. B23p *3/00*, *25/00*
U.S. Cl. 29—458 **3 Claims**

Useful surgical elements consist of a sterile synthetic copolymer containing, by mol percent, about 15 to 85 percent glycolic acid and 85 to 15 percent lactic acid, which has enhanced tissue absorption as compared with polylactic acid and enhanced solubility in organic solvents as compared with polyglycolic acid and hence can be cast into sheets during preparation and implantation. Such surgical element may be used alone or in combination with polyglycolic acid or a coating for polyglycolic acid. Other comonomers may be introduced into the system.

3,736,647
METHOD FOR MAINTAINING CONSTANT THE DISTANCE OF A CUTTING OR WELDING TORCH FROM THE WORK PIECE

Georg Roeder, Frankfurt/Main, and Claus Schmidt, Eberstein-burg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Aug. 10, 1970, Ser. No. 62,440
Claims priority, application Germany, Aug. 16, 1969, P 19 41 728.8
Int. Cl. B23k
U.S. Cl. 29—470 6 Claims



A method of maintaining constant the distance of a cutting or welding torch from a work piece being cut or welded according to which a capacitance is formed between a sensing electrode having a predetermined sensing surface secured to the torch and the work piece surface, the varying magnitude of the capacitance being affective to operate a device to adjust the position of the torch to a predetermined height, a change of said capacitance due to a change of the magnitude of the sensing surface of the sensing electrode projected on said work surface is then compensated, such change occurring when the sensing electrode passes over an edge portion of the work piece.

3,736,648
METHOD OF BONDING A ZIRCONIA MEMBER WITH ANOTHER MEMBER

David Henry Spielberg, and Charles J. Levesque, both of Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 20, 1971, Ser. No. 210,135
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 13 Claims

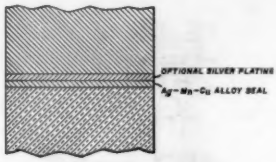
Method of bonding together two members, one of which comprises zirconia. A mixture is prepared comprising an active metallic component such as titanium, zirconium, titanium hydride, or zirconium hydride, and a brazing metallic component such as silver, copper, gold, or the like. The mixture is applied to the region of the zirconia member to be bonded. The members are placed together in a contiguous relationship in the regions to be bonded. The members are then heated to above the melting point of the mixture in a non-oxidizing environment, such as in helium. After the members are bonded, they are cooled to an annealing temperature of the zirconia, and oxygen is slowly introduced into their environment. The oxygen makes up any deficiency of oxygen in the zirconia member resulting from the bonding procedure.

3,736,649
METHOD OF MAKING CERAMIC-TO-METAL SEAL

Robert H. Bristow, Ballston Lake, N.Y., assignor to General Electric Company, Owensboro, Ky.

Division of Ser. No. 130,265, April 1, 1971, Pat. No. 3,700,420. This application Aug. 2, 1972, Ser. No. 277,262
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 3 Claims

A ceramic-to-metal seal is described which comprises a silver-manganese-copper alloy. Metal may be sealed to ceramic in a one step process without prior metallizing of the ceramic. The alloy melts at temperatures which are sufficiently



below the melting point of silver to enable one to seal silver-plated metal parts to ceramic without melting the silver plating.

3,736,650
METHOD FOR MAKING METAL-TO-CERAMIC SEALS

Norman C. Anderson, Foster City, Calif., assignor to Varian Associates, Palo Alto, Calif.

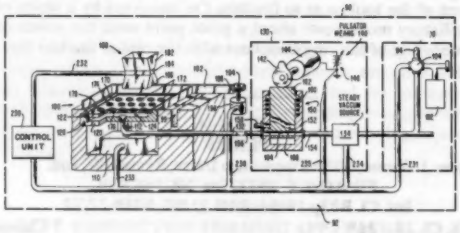
Filed June 1, 1971, Ser. No. 148,891
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 13 Claims

An alkali metal corrosion resistant vacuum tight metal-to-ceramic seal is formed between a high alumina ceramic body and a refractory alkali metal resistant metal member, such as Cb-1Zr, by interposing a powdered brazing mixture comprising by weight a majority of elemental columbium powder and a second metal powder selected from the class consisting of iron and nickel, and firing the assembly in vacuum at a temperature between 1,500°C and 1,675°C to partially melt a portion of the powder to form a melted bonding phase component interstitially of the undissolved columbium particles for bonding the ceramic to the metal part.

3,736,651
AUTOMATIC PIN INSERTION AND BONDING TO A METALLIZED PAD ON A SUBSTRATE SURFACE

John M. Law, Lighthouse Point; Alfred A. Strickler, and Walter Von Kaenel, both of Pompano Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,575
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 6 Claims



The invention is a method of automatically bonding elongated articles such as headed pins to metallized contact pads on a ceramic substrate. The elongate articles are automatically inserted into the carrier by (1) placing the carrier in a carrier support, (2) releasing elongate articles onto the carrier, (3) vibrating the support to vibrate the carrier and agitate the elongated articles, (4) applying a pressure differential between the tops and the bottoms of the holes to create air flow into the tops of the holes to suck the elongate articles into the holes, and (5) periodically reducing the pressure differential to allow the vibration to dislodge any jammed arti-

cles. The frequency and amplitude of the vibration and the duty cycle and period of the pressure differential are adjusted to dislodge jammed articles during the time the pressure differential is reduced, while retaining in the holes the elongate articles which have been inserted into the holes in a proper orientation. The bonding method comprises the steps of (1) inserting the elongate articles into holes in a carrier, (2) removing any excess articles, (3) masking the carrier to prevent bonding material adhering to the carrier, applying bonding material to the ends of the elongate articles in accordance with the mask, (5) bringing the ends of the elongate articles into contact with the contact points on the substantially flat surface to which the articles are to be bonded, (6) applying pressure to each elongate article individually, (7) heating the contact points on the substrate surface and the elongate articles to form a permanent bond between them and (8) cooling the elongate atticles and contact points to allow the bonding material to set.

3,736,652

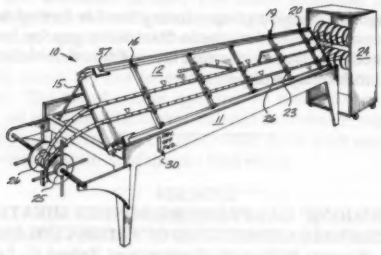
METHODS FOR FORMING WIRE BUNDLES AND AN APPARATUS FOR CARRYING OUT THE METHOD

Ralph P. Fletcher, Jr., Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 55,502, July 16, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,925

Int. Cl. B23p *19/00*; H05k *13/00, 3/32*

U.S. Cl. 29—429 **12 Claims**



Two methods are disclosed for forming wire bundles, one method for forming an elongated wire bundle longer than the conventional working table and a second method for forming a shorter wire bundle. An apparatus for carrying out both methods comprises an endless canvas belt stretched between two rollers mounted at the ends of an elongated table, a drawing on rollers at each end of the table and overlying and supported by the belt for moving therewith, and a plurality of wires from reels at one end of the table for being positioned over the drawing and held in precise position with detachable brackets during the forming of the wire bundle. Then after completion of the wire bundle, or portion thereof, the endless belt is started moving and as the completed wire bundle winds on to a storage reel, the brackets are released by a trigger device to permit the drawing to separate from the endless belt and wind up on a storage roller.

For carrying out the former method, as the first portion of the drawing for which the wire bundle has been completely assembled, is wound on the storage roller, it pulls the second portion of the drawing and the wire related to that portion out over the table for being clamped to the endless belt so that the rest of the bundle may be formed thereover. This continuous forming and storing of the wire bundle portions is carried on until all of the elongated wire bundle is coiled on its storage reel before the next wire bundle is begun.

For carrying out the latter method, as a complete wire bundle is formed over the drawing, the finished wire bundle is disconnected from the drawing and the endless belt, and wound on the storage reel as the drawing is wound on its storage roller. Then the drawing is reversed and rewound back on the table for permitting the forming of another wire bundle like the first.

For ease of working on the wire bundles by human beings working over the drawing, the portion including the drawing and its rollers, the supporting endless belt and its rollers, the clamping brackets attaching all together, and the wires extending over the drawing may be tilted to a convenient angle.

A quick opening bracket with a plurality of clamps thereon is disclosed which opens instantly upon contact with a trigger device at the end of the work table.

3,736,653

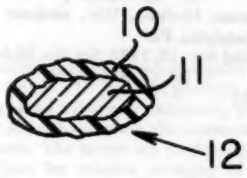
PROCESS FOR SOLDERING USING PRE-FLUXED SOLDER POWDER

Theodore Maierson, Dayton; Harry L. Roe, Jr., Centerville, and James E. Williams, Kettering, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 35,414, May 7, 1970, Pat. No. 3,703,254. This application Dec. 1, 1971, Ser. No. 203,923

Int. Cl. B23k *31/02, 35/36*

U.S. Cl. 29—496 **2 Claims**



A solder powder is disclosed comprising minute particles of metallic alloy solder coated by a thin layer of rosin soldering flux such that the flux performs a triple function of: (a) insulating the individual alloy solder particles from electrical conductance; (b) adhesively holding individual particles of solder in place by virtue of the sticky characteristics of the preferred fluxes used to coat the solder powder; and (c) providing, when melted, an agent to clean substrates and workpieces to be joined by soldering.

3,736,654

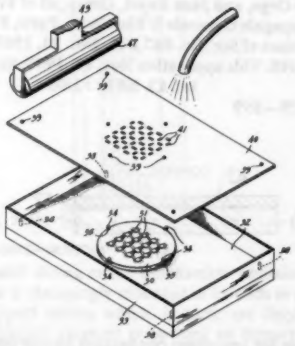
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, which is a continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,278

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **13 Claims**



First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for ex-

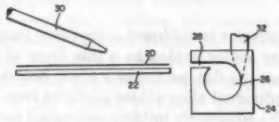
ample, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,736,655

METHOD FOR FORMING AND PLACING TUBULAR BATTERY SEPARATORS AND MEANS EMBODYING THE METHOD

Milo H. Beckman, Madison, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 18, 1970, Ser. No. 90,641
Int. Cl. B31c *3/00*
U.S. Cl. 29—592 **6 Claims**



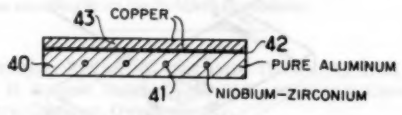
Battery separator material in strip form and cut to proper size is entered tangentially into a borehole. Air streams directed tangentially to the borehole cause the strip of material to roll up into a tube of controlled diameter. When the tube is wound, a pressure differential between the two ends of the borehole causes the tube to eject into a waiting battery assembly placed on the trajectory of the rolled tube.

3,736,656

METHOD OF MANUFACTURING ASYMMETRICAL SUPERCONDUCTIVE CABLES FOR CARRYING EITHER ALTERNATING OR DIRECT CURRENT

Marcel Aupoix, Paris; Francois Moisson Franckhauser, Bretigny-sur-Orge, and Jean Royet, Orsay, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Division of Ser. No. 887,848, Dec. 24, 1969, Pat. No. 3,600,498. This application Nov. 17, 1970, Ser. No. 90,436
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **11 Claims**



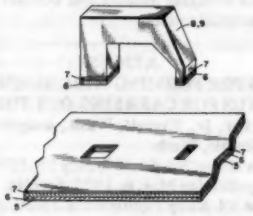
A cable for cryogenic connection having one or more pairs of conductive layers insulated electrically from each other and consisting of several super-conductors arranged in spiral formation over the opposing surfaces of the conductive layers.

3,736,657

METHOD OF MANUFACTURING A TRANSDUCER HEAD FOR MAGNETIC RECORDING/REPRODUCING APPARATUS

Peter F. Varadi, 10500 Rockville Pike, Stamford, Conn., and Laslo Gabor Sebestyen, 41 Ashbourne Road, London, England

Division of Ser. No. 870,293, Nov. 28, 1969, Pat. No. 3,641,281, which is a continuation of Ser. No. 390,435, Aug. 18, 1964, Pat. No. 3,495,045. This application June 22, 1971, Ser. No. 155,632
Int. Cl. H01f *7/06*
U.S. Cl. 29—603 **6 Claims**



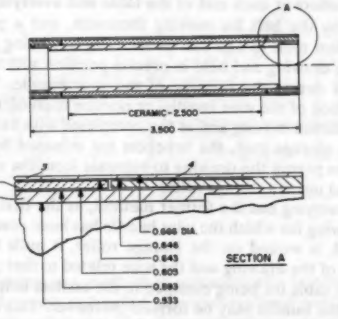
A magnetic recording/reproducing head is formed to provide a controlled non-magnetic transducer gap by bonding prefinished pole faces with a thin layer of transferable bonding material to form a unitary structure.

3,736,658

THERMIONIC GAS-PRESSURE-BONDED SHEATHED INSULATORS AND METHOD OF PRODUCING SAME

Cliff V. Weaver; William A. Ranken, and Robert G. Lawton, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 12, 1970, Ser. No. 79,786
Int. Cl. H01b *19/00*
U.S. Cl. 29—631 **19 Claims**

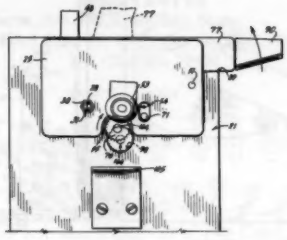


The collector of a thermionic converter, an insulator, and a metal sheath for the insulator are directly gas-pressure-bonded together such that the trilayer thus formed is stress relieved and maintains good structural integrity during machining and during thermocycling caused by operation of the converter. The insulator is alumina and the collector and sheath consist either of niobium metal or Nb-1 wt percent Zr alloy.

3,736,659
POWER OPERATED CAN OPENER WITH UNIQUE THRUST LINK

Robert E. McLean, Kansas City, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Feb. 19, 1971, Ser. No. 116,905
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 8 Claims

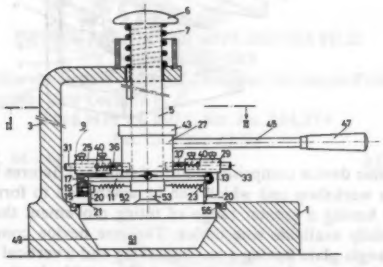


An electrically powered can opener has a selectively removable cutter mounting plate which carries the cutting element thereon and suitable components for initiating pierce and automatic shutoff. The cutter mounting plate is removably fastened to the can opener upright frame by a single pin member and latch. The upright frame further supports the thrust means which is pivotally movable in order to properly orient the can feed wheel with respect to the cutter element. The thrust means operates to move the can feed wheel, yet maintains the center distance between certain gears normally associated with the feed wheel drive shaft regardless of the vertical position of the can feed wheel.

3,736,660
DEVICE FOR THE OPENING OF FOIL SEALED CONTAINERS

Hans Jeger, and Rudolf Rohre, both of Schaffhausen, Switzerland, assignors to Schweizerische Aluminum AG, Chippis (VS), Switzerland

Filed May 7, 1971, Ser. No. 141,312
Claims priority, application Switzerland, June 5, 1970, 8431/70
Int. Cl. B67b 7/30
U.S. Cl. 30—6.4 16 Claims

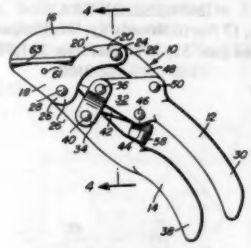


Device for opening a sealed container comprising: a knife; means for raising and lowering the knife off the container; rotating means for rotating the knife around the container portion to be cut out; a fixedly positioned jig shaped in the shape of the portion of the container to be cut out; biasing means holding the knife against the jig guide surface to guide the cutting to the desired shape.

3,736,661
SHEAR CONSTRUCTION

Charlie G. Stewart, P. O. Box 327, Birmingham, Ala.

Continuation-in-part of Ser. No. 872,615, Oct. 30, 1969, Pat. No. 3,638,307. This application Jan. 3, 1972, Ser. No. 214,863
Int. Cl. B26b 17/00
U.S. Cl. 30—192 2 Claims

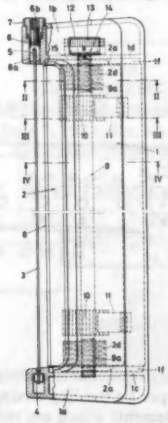


A pair of shears including relatively swingable jaws and relatively swingable levers. The jaws are pivotally connected for relative swinging about a first axis stationarily positioned relative to both jaws and the levers are also connected for relative swinging movement. The levers are further operatively connected to the jaws for relative swinging of the latter in response to swinging of the levers with the axis of relative swinging of the jaws shifting relative to both levers during relative swinging of the jaws.

3,736,662
HAND-OPERATED SLICING CUTTER MECHANISM

Horst Hartmann, Stuttgart, Germany, assignor to K. Zysset & Co. AG, Lyss, Switzerland

Filed Feb. 17, 1972, Ser. No. 227,131
Claims priority, application Germany, Mar. 1, 1971, G 71 07 546.2
Int. Cl. B26b 3/03
U.S. Cl. 30—283 4 Claims



A hand-operated slicing cutter mechanism wherein a flexible cutting blade is clampingly mounted at its ends in spanned condition at support means which, in turn, are displaceably mounted at an impact element possessing an impact surface intended to bear against the material to be cut, for the purpose of changing the spacing between the cutting blade and the impact surface. According to important aspects of the invention, the support means consists of the legs of a rigid substantially

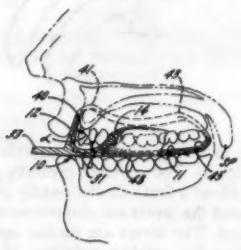
U-shaped support element at which there is guided the impact element in a direction which is disposed perpendicular to the plane of the cutting blade and the impact surface. At one of both elements there is rotatably mounted an adjustment shaft parallel to the cutting blade which is equipped at the region of the legs with similar pinion teeth which mesh with the teeth of a gear rack present at the other of both elements.

3,736,663

IMPRESSION TRAY

Velton C. White, 17 North Broadway, Des Plaines, Ill.

Filed Jan. 31, 1972, Ser. No. 221,985
Int. Cl. A61c 9/00
U.S. Cl. 32—17 6 Claims



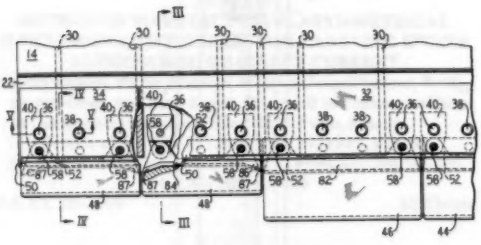
Novel dental impression trays are provided which are compatible with any usual patient's dental anatomy. A tray set includes trays for use with maxillary and mandibular deciduous, mixed and permanent dentition. Each tray is made of a flexible inner mesh form and an outer covering, and is hand moldable through a limited range of shapes.

3,736,664

REPLACEABLE PINNED-ON CUTTING EDGE

William J. Black, Wilmington; William E. Lanz, and Eugene M. Wilson, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1971, Ser. No. 188,219
Int. Cl. E02f 9/28
U.S. Cl. 37—141 R 6 Claims



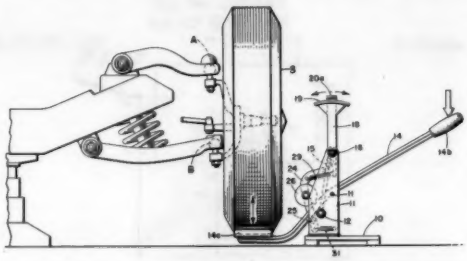
A quickly and easily replaceable cutting edge assembly for an earthmoving scraper or the like having a plurality of discrete cutting edge elements which are removably secured by means of "drive out" pins to a cutting edge support member. The cutting edge support member is integral with the scraper bowl or the like. Each cutting edge element is provided with a bifurcated portion which engagingly straddles the edge support member. Holes are provided in each edge element which register with holes in the support member to provide bores through which the drive-out pins are inserted to retain the cutting edge elements in place.

3,736,665

DEVICE FOR TESTING BALL JOINTS, KING PINS AND THE LIKE

Clarence E. La Moreux, Winter Haven, Fla., assignor to Maurex Inc., Orlando, Fla.

Filed Oct. 30, 1970, Ser. No. 85,325
Int. Cl. G01b 5/24, 3/22
U.S. Cl. 33—169 R 10 Claims



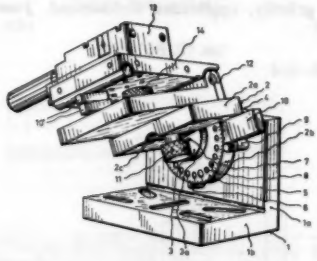
A ball joint or king pin tester for automotive vehicles having means to oscillate the ball joint or king pin so as to displace the wearing parts thereof with respect to one another, and having means to measure the amount of such displacement so that appropriate maintenance may be provided if necessary. The device also comprises a pressure roller for testing tire out-of-roundness.

3,736,666

UNIVERSAL SINE DEVICE

Franz Sutter, Niederdorf, Basel-Land, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann AG, Waldenburg, Switzerland

Filed Aug. 31, 1970, Ser. No. 68,064
Claims priority, application Switzerland, Sept. 5, 1969, 13473/69
Int. Cl. B23q 3/00
U.S. Cl. 33—174 TC 2 Claims



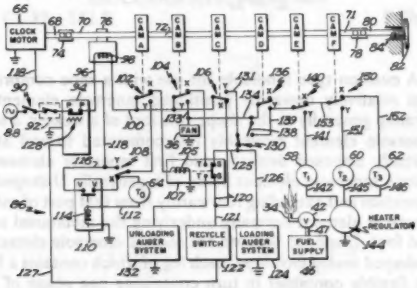
A sine device comprises modified standard fixtures found in every workshop and which can be assembled to form a sine table having a greater range of tilting movement than commercially available sine tables. The sine device comprises a first angle plate having a horizontal leg and a vertical leg, and a second angle plate, constituting a tilting table, having a vertical leg pivotally mounted on the vertical leg of the first angle plate for tilting about a horizontal axis. Pin means are disengageably insertable in apertures in the vertical leg of the first angle plate to serve, either alone or in combination with gauge blocks, as references and supports for the tiltable table in any angularly adjusted position of the table. The horizontal leg of the table may be formed with inverted T-slots and apertures whereby various components may be adjustably positioned

thereon, such components including, for example, a commercial sine table, a vise, or the like. The vertical leg of the table may be formed with a suitable scale of anuglar graduations and a circular series of apertures to receive locating pins engageable in a locating aperture in the vertical leg of the first angle plate. All or most of the elements are usable separately and independently of each other.

3,736,667
GRAIN DRYER

Jay L. McClaren, Box 559, Litchfield, Minn.

Filed June 28, 1971, Ser. No. 157,373
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 **17 Claims**



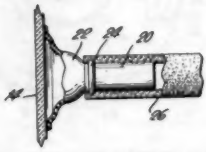
A batch dryer for conditioning grain having a clock driven control system including a plurality of successively activated electric circuits for regulating drying bin temperature. The successively activated circuits maintain successively lower drying bin temperature levels defined by individual termostats in each temperature regulating circuit. A clock drive controls a plurality of cam actuated switches which turn the temperature regulating circuits on and off. The control system prevents the loading of wet grain into the drying bin late in the control cycle so that all grain then in the bin has ample time for thorough drying.

The purpose of the foregoing abstract is to enable the Patent Office and the public generally, and especially the scientists, engineers, or practitioners in the art who are not familiar with patent or legal terms of phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,736,668
DEVICE FOR DRYER APPLIED TEXTILE CONDITIONERS

Alan Dillarstone, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 19, 1971, Ser. No. 144,774
Int. Cl. F26b *11/04*
U.S. Cl. 34—60 **3 Claims**

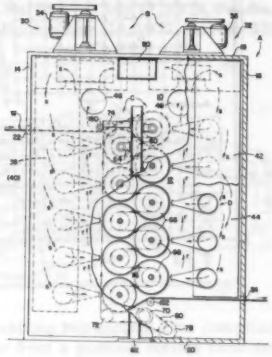


A device for dryer applied textile conditioners and for a clothes dryer comprising a suction cup having associated therewith the fabric conditioning material. The conditioning material is physically attached to the suction cup and may be in the form of a rod, tube or sheet.

3,736,669
NOZZLE DESIGN FOR A FABRIC WEB TREATING FACILITY

Charles H. Amidon, Jr., Warminster, and Vincent A. Galeone, Warrington, both of Pa., assignors to Gulf & Western Systems Company, New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,793
Int. Cl. F26b *19/00*
U.S. Cl. 34—229 **8 Claims**

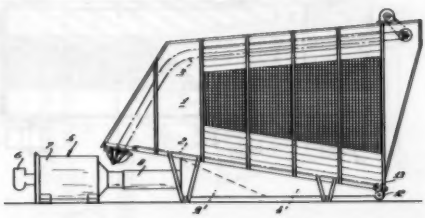


A nozzle design for particular use with a fabric web treatment facility in which heated air is periodically impinged against the web through nozzles as it is processed through the facility around a plurality of elongated rolls. The design provides for ease of access into the facility for cleaning and threading the web onto the rolls by providing a pivotal mounting for the nozzles in order that they may be arcuately moved between a first operative position closely spaced to the web and a second position spaced remote therefrom. Each nozzle includes three air outlet passages extending transversely thereacross in order that the heated air flow therethrough will impinge the web at varied angles and eliminate return air velocities.

3,736,670
CROP DRIERS

Ary van der Lely, 10, Weverskade, Maasland, Netherlands

Filed June 7, 1971, Ser. No. 150,287
Claims priority, application Netherlands, June 11, 1970, 7008488
Int. Cl. F26b *19/00*
U.S. Cl. 34—218 **7 Claims**

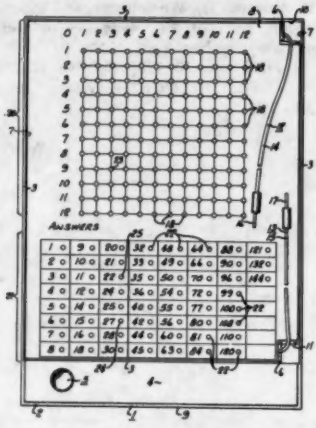


A crop drier has an enclosed drying space and a heater which forces heated air through a lower air passage and into contact with crop being moved through the drying space. At the lower aspect of the passage, a debris collecting and cleaning device is positioned. The cleaning device can be displaced relative to the remainder of the drier for debris removal.

3,736,671
EDUCATIONAL APPARATUS

Julius Oleinick, 121 Penhurst Drive, Pittsburgh, Pa.

Filed June 24, 1971, Ser. No. 156,233
Int. Cl. G09b 7/10
U.S. Cl. 35—9 C 7 Claims

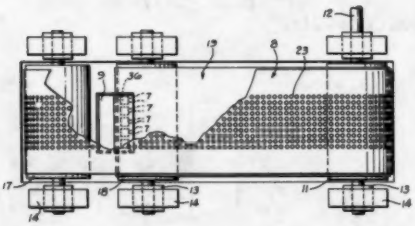


Educational apparatus with a circuitry board provided to receive a program pannel having a problem or question section and response or answer section to permit the operator to first, through contact engaging means, select a question in the question section to be answered, and, secondly, seek proper selection of an answer through contact engaging means in the answer section, the correct response being indicated by signal means, such as, in the form of a light or bell. Selective switch means is provided in the circuitry board operative to indicate to the operator at any time desired the proper and correct response to the question selected through the signal means.

3,736,672
READING MACHINE FOR THE BLIND

John B. Skewis, 2427 Alvin Street, Mountain View, Calif., and James Y. Lawrie, 145 Johnson Avenue, Los Gatos, Calif.

Filed Dec. 29, 1971, Ser. No. 213,449
Int. Cl. G09b 21/00
U.S. Cl. 35—35 A 10 Claims

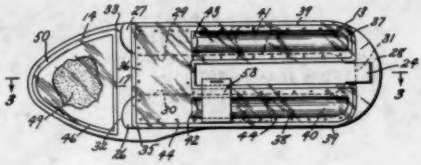


Equipment which assembles and presents upon a controlled moving belt a succession of raised replicas of characters delineated on a sheet to enable the reading of any work by a blind person by tactual sensing of the raised replicas of the characters as presented in the same order and spacing on said belt as on such sheet.

3,736,673
CUSHION SHOE INNERSOLE CONSTRUCTION

Benjamin B. Dubner, 229-02 Merrick Road, New Hyde Park, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,724
Int. Cl. A43b 13/38
U.S. Cl. 36—44 6 Claims

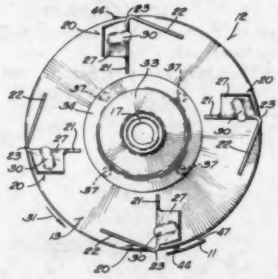


A cushion type innersole for use with a shoe comprising a first relatively upwardly positioned innersole element conforming generally to the shape of a foot of a wearer, a second innersole element moveably interconnected to and at least partially disposed beneath said first innersole element, the second innersole element being of a generally U-shaped configuration and extending rearwardly from that part of said first innersole element normally underlying the metatarsal area of said foot. Disposed beneath the second innersole element is a U-shaped sealed envelope, each leg of which contains a frangible flexible container in turn containing one phase of a two phase rigid foam system. The two phases are manually mixed before insertion of the device into the shoe of a wearer, and the foot placed thereupon to enable the foam upon expanding and curing to conform the upper surface of the device to the foot of the wearer. Optionally, the U-shaped sealed envelope may be provided with small perforations through which a small amount of foam, upon expanding passes to provide a cementitious effect serving to anchor the insole in position within a shoe. Forwardly of the metatarsal area, the toe cushioning portion of the device is provided with a sealed envelope containing a soft wax which conforms to the toes of the wearer as the device is used. In one embodiment, the device is formed in two pieces, whereby a variety of shoe sizes is readily accommodated by one size of device.

3,736,674
IMPELLER

Edward W. Enters, Fredonia, Wis., assignor to Gibson Bros. Co., Plymouth, Wis.

Filed Sept. 22, 1970, Ser. No. 74,379
Int. Cl. E01h 5/00
U.S. Cl. 37—43 R 7 Claims



A second stage impeller for a snow blower. The impeller parts are made of light gauge sheet metal. The impeller base rotor is stamped in a dome shape to increase its strength and has attached thereto sheet metal impeller flights, each of which comprises a paddle transverse to the path of impeller

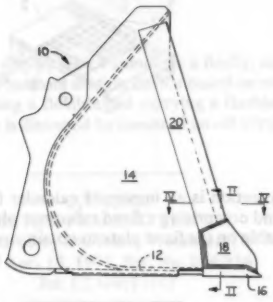
rotation and a bracing strut behind the paddle. The paddle desirably has a top portion curved forward in the direction of impeller rotation and a reenforcing rib embossed in the curved portion. The base rotor has an opening through which the impeller shaft hub extends. A sheet metal cap is superimposed over the base rotor and has a rim fastened to the face of the base rotor and has an apertured crown spaced from the base rotor and through which the shaft hub extends.

3,736,675

CORNER CONSTRUCTION FOR LOADER BUCKETS OR THE LIKE

Robert F. Shankwitz, Oswego, and Jerome A. Thies, Kaneville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 13, 1971, Ser. No. 106,118
Int. Cl. E02f *9/28*; A01b *35/20*
U.S. Cl. 37—141 R **5 Claims**



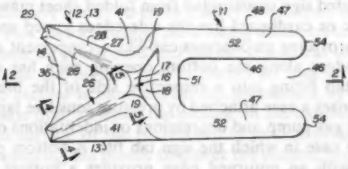
A loader bucket corner member for connecting the cutting edge of the bucket to the side walls thereof. The corner member is a vertically disposed hardened member located within the outer confines of the cutting edge and protected from wear thereby. The corner member has a thickness substantially greater than that of the bucket side walls and substantially the same as that of the cutting edge to provide a uniform section modulus transition between the corner member and the cutting edge and consequent stress distribution. The corner member can comprise a forging or casting having a flared lower portion which provides a smooth inner surface at the junction between the cutting edge and the side walls or it can comprise a hardened flat plate member. Chamfers are provided along the surfaces of connection between the side walls, cutting edge and corner member to facilitate weld-joining of these parts.

3,736,676

EXCAVATING TOOTH HAVING OUTWARDLY SLANTED RIBS

Walter L. Sturgeon, Sunnyvale, Calif., assignor to Pengo Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 40,326, May 25, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,118
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 R **4 Claims**



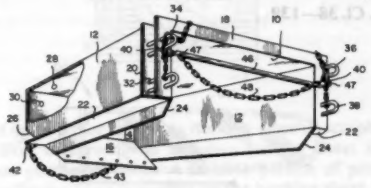
A replaceable tooth for excavating equipment, such as earth augers, has a distal portion which is generally rectangular in plan but has an inwardly curved cutting edge. The distal is formed with ribs on the upper surface which originate at a transverse protuberance at the rear of the distal and slant forwardly-outwardly to the front corners of the tooth. On the bottom surface, a corresponding protuberance and ribs of lesser dimension than those on the upper surface underly the upper surface ribs. Between the ribs and outside the ribs the tooth is relatively thin and comprises webs. In use, the webs wear faster than the ribs and expose the ends of the rib in points which improve digging action.

3,736,677

SILT DREDGING METHOD

Henry Albert Loy, 87 North 11th W., Provo, Utah

Division of Ser. No. 54,910, July 13, 1970, Pat. No. 3,679,004. This application Mar. 24, 1972, Ser. No. 237,757
Int. Cl. E02f *5/28*
U.S. Cl. 37—195 **4 Claims**



A method involving two aspects. One comprises dragging a suitable scraper from a position remote from the shore of a body of water toward it and lifting the scraper, i.e., not dumping it, at the place the silt is to be deposited above its load of silt. The second aspect, which can be used alone or preceding the first comprises dragging the scraper along the bottom of the body of water only in the area to be deepened to loosen and agitate the silt to put it in suspension so that normal currents in the body of water carry it towards the shore. Thereafter, if desired, and with relatively short path of travel, a scraper can pull redeposited silt near the shore onto it.

ERRATUM

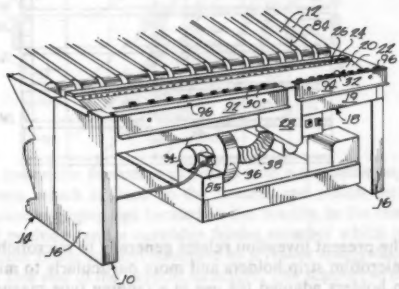
For Class 37—141 R see:
Patent No. 3,736,664

3,736,678

FEEDER APPARATUS

Eduard F. Kamberg, Deerfield, Ill., assignor to Chicago Dryer Company, Chicago, Ill.

Filed Dec. 3, 1971, Ser. No. 204,614
Int. Cl. D06f *67/04*
U.S. Cl. 38—143 **9 Claims**



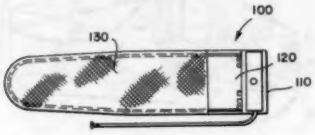
A feeder apparatus adapted for use with folding machines and ironers is employed in the processing of flexible textile

items such as sheets, towels and the like. A feed table is provided having a transverse vacuum section which tends to exert a "drag" on the sheet being fed into the processing device having continuous belt members which pull the fed article over the vacuum section. Opposed series of brushes moving transversely to the direction of movement of the sheet engage the undersurface of the sheet fed into the apparatus, so as to move the same toward the opposed sides of the feeder. The feeder thus exerts simultaneous drag and spreading effects on a sheet, thereby removing all wrinkles therefrom so that the same may be efficiently folded or ironed in subsequent operations.

3,736,679
ARTICULATED IRONING BOARD

Orlando Cabezas, 2707 Central Avenue, Apt. A-3, Union City, N.J.

Filed May 26, 1971, Ser. No. 146,983
Int. Cl. D06f 81/00
U.S. Cl. 38—139 4 Claims

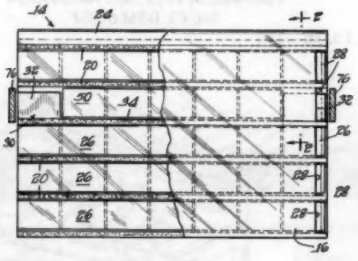


This is a portable ironing board which in combination includes a basic ironing board of collapsible construction so that it may be handily placed in a utility closet. At one end of the board on a base member there is disposed means for applying a water spray to the ironing board, and along the extension of a base member is an articulated board having hinge connection with cloth covering, said cloth covering being stretched on a frame in operation and being selectively removable during operation for facile disposition of the clothes to be ironed thereon. The device presupposes that the iron used does not contain built-in vaporizing means, although it is indeed operable with such modern domestic vaporizer means.

3,736,680
MICROFILM HOLDER

Ernest A. Dahl, Jr., 729 Greenwood Avenue, Wilmette, Ill.

Filed Oct. 2, 1970, Ser. No. 77,582
Int. Cl. G09f 7/10
U.S. Cl. 40—105.5 2 Claims

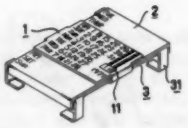


The present invention relates generally to microfiche types of microfilm strip holders and more particularly to microfilm strip holders adapted for use in a fanning type magnetic file tray system. An embodiment of the invention illustrated in the drawings comprises front and rear rectangular panels of transparent and flexible synthetic plastic material, commonly referred to as a microfiche master, which provides a plurality of horizontal pockets for receiving microfilm strips. At least one of these pockets has mounted therein a magnetic strip, the opposite extremities of which terminate adjacent the vertical edge portions of the microfiche master or holder in position for cooperation with the magnets of a filing tray, to effect fanning apart of the upper margins of a predetermined group of holders.

3,736,681
CALENDAR FOR MOUNTING ON WATCH BAND

Shih-Chieh Chang, 37 Mo Fan Street, Alley 2, Min Lung Li, West District Tai Chung, Taiwan

Filed Dec. 1, 1970, Ser. No. 93,985
Int. Cl. G09d 3/00
U.S. Cl. 40—109 1 Claim

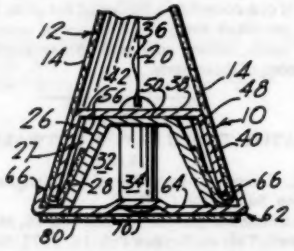


This invention is an improved calendar for mounting on a watch band comprising a fixed reference plate and a calendar plate slidable on the fixed plate to obtain an annual calendar.

3,736,682
SIGN WITH BRACKET

Kenneth R. Farmer, Atlanta, and Larry G. Hanson, Austell, both of Ga., assignors to said Farmer, by said Hanson, Atlanta, Ga.

Filed June 11, 1971, Ser. No. 152,241
Int. Cl. G09f 07/00
U.S. Cl. 40—125 H 9 Claims

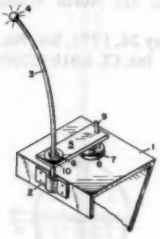


Especially useful for advertising on top of gasoline pumps, a two-sided sign constructed from folded sheet material such as plastic or cardboard has the side edges joined and sealed by glue providing an overseas cap-like arrangement and the bottom edges along the bottom opening each has an inwardly bent tab fitting into a respective side of the bracket which comprises a case attached by pressure sensitive tape to the top of the gas pump and depressions or indentations on each side of the case in which the sign tab fits. A bottom plate on the case with an upturned edge provides a bottom channel in which the depending side plates of a top cover cap extend to provide a closed slot overlying the respective indentations in which fit the tab thereby making it difficult to displace the sign from the bracket.

3,736,683
NON-REPETITIVE FLASHING DISPLAY MECHANISM

Elmer G. Paquette, Madison, Wis., assignor to Bjorkstem Research Laboratories, Inc., Madison, Wis.

Filed Feb. 23, 1971, Ser. No. 118,023
Int. Cl. G09f *19/00*
U.S. Cl. 40—126 B 7 Claims

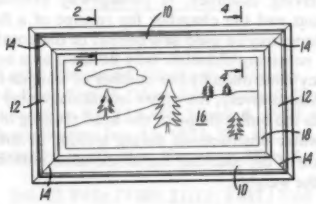


An advertising display which simulates a firefly, comprising an unrepetitive or random motion device based on reciprocating means actuating a flexible rod carrying a flashing device, where the motion is distorted by means of an off vertical crank shaft.

3,736,684
CUSTOM FRAMING SYSTEM

Peter P. Grad, 900 Yerry Hill Road, Woodstock, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,316
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 2 Claims

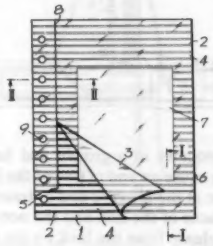


Frames for prints, photographs, paintings, and the like, are custom made from materials in a kit including lengths of framing members, fasteners and a composite backing sheet. The framing members have one side of ornamental configuration and a reverse side provided with longitudinal locking grooves and a recessed edge. The framing members are mitre cut to appropriate lengths for the finished frame and the segments thereof are firmly fastened together at the mitred intersections by means of angle fastening members that snap into the locking grooves in the reverse sides of the framing members. The framed picture or photograph is secured within the recess formed on the rearwardly facing side of the assembled frame around it inner edge. A backing and protective support for the picture or photograph includes a layer of stiff pressboard or similar material with one surface suitably finished to provide a pleasing border or mat for the visual display. The finished surface of the pressboard is coated with a transparent pressure-sensitive adhesive and covered by a sheet of transparent peelable plastic film. Before cutting the framing members to length, the composite of pressboard and plastic film is cut to size to accommodate the picture with a border or mat of desired width. The picture is mounted on the pressboard by peeling off the plastic film, applying the picture on the exposed adhesive coated surface of the pressboard in its desired position, and then replacing the plastic film over the picture, securing it to the pressboard by means of the exposed adhesive on the mat areas. The frame members may then be cut to appropriate length to accommodate the mounted picture, assembled and the picture secured within the frame.

3,736,685
ADHESIVE SHEET MATERIAL

Ryoji Shibata, No. 390, Okayama-cho, Higashi-ku, Osaka, Japan

Continuation-in-part of Ser. No. 352,855, March 18, 1964, abandoned. This application Jan. 12, 1968, Ser. No. 697,532
Claims priority, application Japan, Nov. 14, 1963, 38/61263; Nov. 14, 1963, 38/85736; Nov. 22, 1963, 38/62791; Nov. 22, 1963, 38/87935; Dec. 1, 1963, 38/65144
Int. Cl. G09f *1/10*
U.S. Cl. 40—158 6 Claims

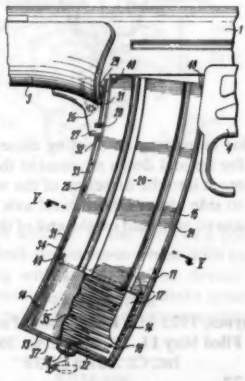


A sheet material for mounting items in albums, scrapbooks and the like, comprising an adhesive backing sheet and a transparent protective sheet. A suitable pattern of pressure sensitive adhesive films is printed on the backing sheet, leaving a certain amount of unprinted areas which are substantially lower than the printed portions.

3,736,686
AUTOMATIC HAND FIREARM WITH INTERCHANGEABLE MAGAZINE

Tilo Moller, and Dieter Ketterer, both of 7238 Oberndorf, Germany, assignors to Heckler & Koch GmbH, Oberndorf (Neckar), Germany

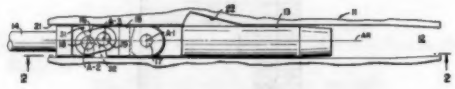
Filed June 15, 1971, Ser. No. 153,349
Claims priority, application Germany, June 19, 1970, P 20 30 228.7
Int. Cl. F41c *25/00, 25/02*
U.S. Cl. 42—6 18 Claims



An automatic firearm is provided with a magazine support structure which is fixed to the firearm and which includes magazine engaging lips located in the firearm in the conventional position, and a cartridge feeder member which is displaceable in the support structure by a feeder spring disposed at the free end of the support structure. The support structure has a lateral opening for inserting therein a magazine containing cartridges. Means are provided for releasably closing the opening. A flat tubular magazine is disclosed which is open at both ends, one of which is adapted to be engaged and secured by the magazine lips, the other one is arranged to be entered

by the feeder member for delivering the cartridges to the breech. The magazine may be used as a packaging container for the cartridges.

3,736,687
LOCK FOR A RECIPROCATING MECHANISM
Thomas M. Broxholm, Palo Alto, Calif., assignor to Pulsepower Systems Inc., San Carlos, Calif.
Filed Oct. 15, 1970, Ser. No. 80,846
Int. Cl. F41c *11/06*; **F41d** *3/00, 3/02*
U.S. Cl. 42—16 **6 Claims**

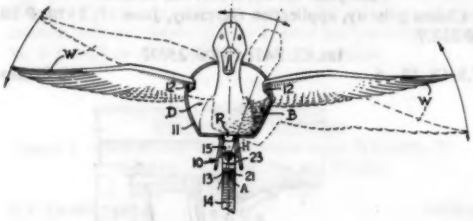


A linkage reciprocates in a groove and has offset pivotal connections which cause an end of one of the links to engage a notch in the groove at the forward end of travel of the linkage. The engaging surfaces of the link and the notch are curved to produce a quick release from the lock by the rearward movement of the linkage.

ERRATUM

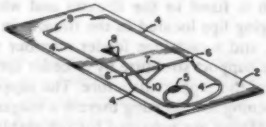
For Class 42—78 see:
Patent No. 3,736,693

3,736,688
MOUNTING MEANS FOR ANIMATING EXISTING DECOY
Samuel Caccamo, 1102 Camino Pablo, San Jose, Calif.
Filed Mar. 18, 1971, Ser. No. 125,595
Int. Cl. A01m *31/06*
U.S. Cl. 43—3 **5 Claims**



A means for animating an existing decoy on the end of a flexible arm for up and down movement therewith as well as pivotal movement into the direction of the wind and rockability from side to side about a horizontal axis upon a releasable attaching means so mounted on the end of the flexible arm.

3,736,689
MOLE TRAP
Robert E. Haynes, 1925 Mill Road, South Pasadena, Calif.
Filed May 11, 1970, Ser. No. 36,293
Int. Cl. A01m *23/36*
U.S. Cl. 43—77 **1 Claim**



The invention comprises of a U-shaped steel spring with pointed ends mounted within a housing. The pointed ends of the steel spring tending to close when not held in the open position. The pointed ends of the steel spring being being held in the open position by an in-line hinged bar; the in-line hinged bar being tripped to an off position by depressing a trip bar.

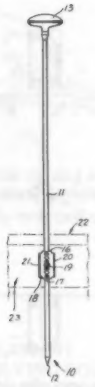
3,736,690
COMBINATION BOBBER-SINKER
Sigmund Witkowski, 312 North Washington Street, Westmont, Ill.
Filed May 24, 1971, Ser. No. 146,014
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.14 **7 Claims**

A combination fishing bobber-sinker. The bobber-sinker includes a bullet-shaped float trailing a removable, apertured weight receiving chamber. A passageway extends through both the float and the chamber for receipt of a fishing line. The float alone may be used as a bobber or the combined float and weight receiving chamber may be used as a bobber with the buoyancy controlled by the number of weights received in the latter. Alternatively, the entire assemblage may be used as a sinker with the bullet shape of the head tending to easily slip past underwater obstructions during trolling or the like. The lower portion of the chamber has an elevated bottom platform to support the weights.

3,736,691
CHROME SLIDE LOCK BEAD BAIT HOLDER
Lewis L. Gist, 1039 Azalea Avenue, McKinleyville, Calif.
Filed Sept. 30, 1971, Ser. No. 185,232
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 **2 Claims**

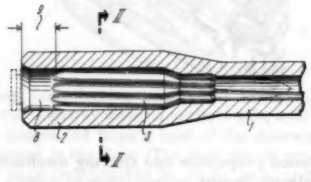
A bait holding hook assembly for sports fishing, the device consisting of an elongated wire shaft having a back hook permanently affixed to a rear end of the wire shaft. A slide hook is slideable along the length of the wire shaft and is selectively securable along any position thereof by means of a lock bead. The shank of the slide hook has an obtuse bend, and the lock bead is slidably fitted on the slide hook shank between the bend and its hook portion and also around the wire shaft so that the slide hook can be relatively closer or further from the back hook.

3,736,692
MOLE EXTERMINATOR
James M. Stone, Jr., Nacogdoches, Tex.
Filed Oct. 29, 1971, Ser. No. 193,772
Int. Cl. A01m *23/30*
U.S. Cl. 43—77 4 Claims



A mole exterminator including a ground piercing rod adapted to be forced into the ground intersecting a mole run. A recess in the rod is provided for holding a razor blae secured thereto by a machine screw. The razor blade is arranged with its cutting edges parallel to the axis of the rod and the rod is forced into the ground to a depth which will position the razor blade centrally of the mole run. The mole, upon contacting the razor blade, will become lacerated and will bleed to death.

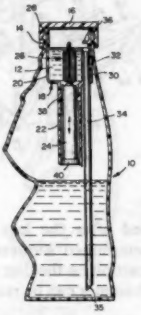
3,736,693
FIREARM BARREL
Theodor Koch, Oberndorf (Neckar), Germany, assignor to Heckler & Koch GmbH, Oberndorf (Neckar), Germany
Continuation of Ser. No. 711,546, March 8, 1968, abandoned. This application Jan. 13, 1971, Ser. No. 106,264
Claims priority, application Germany, Mar. 8, 1967, H 62 052
Int. Cl. F41c *21/00*, *21/12*; F41f *17/10*
U.S. Cl. 42—78 12 Claims



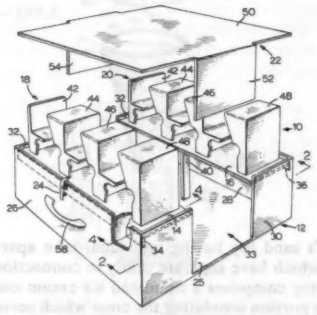
The cartridge chamber of a firearm is provided with release grooves by virtue of polygonal shaping extending to a cylindrical sealing surface at the cap end of the cartridge. This permits simplified production as the chamber can be formed by forging at the same time that rifling of the barrel is effected.

3,736,694
PRESSURE-ACTUATED BUBBLE BLOWING TOY
Steven Allen Lebensfeld, Queens Village, N.Y., assignor to Hot Items Incorporated, Newark, N.J.
Filed Apr. 27, 1972, Ser. No. 248,049
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 10 Claims

A bubble-blowing toy comprises a hollow, compressible container having a film-forming and liquid feeding insert mounted in the interior thereof. The insert comprises a cylindrical well frictionally mounted in the container neck and having a cylinder depending centrally therefrom and a piston longitudinally slidable in the cylinder. The cylinder also has a liquid inlet tube to which is connected a pipe leading to the bottom of the container for feeding bubble-forming liquid from the interior of the container to the well when the container is compressed by squeezing. A film-forming ring is mounted on the top of the piston and is normally located in the well and submerged in the liquid therein. When the container is squeezed, pressure of the compressed air therein elevates the piston within the cylinder, thereby raising the ring, with a film formed thereon, to an exposed position above the top of said well and container neck.



3,736,695
TOY FOR USE WITH DOLLS
Mary Ellen Wannan, 183 Arthur Street, Dryden, Ontario, Canada
Filed Oct. 7, 1971, Ser. No. 187,401
Int. Cl. A63h *33/30*
U.S. Cl. 46—12 2 Claims

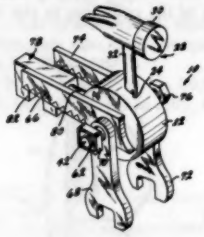


A toy is provided which is in the form of a collapsible toy classroom having desk structures in which dolls can be seated by children playing with the dolls. The device is movable between an open position in which the desks receive the dolls and a closed position in which the device resembles a carrying case.

3,736,696
CONSTRUCTION TOY UTILIZING REAL OR SIMULATED HOUSEHOLD TOOLS AND SIMULATING A REAL OR IMAGINED LIVING THING
Alexandra B. Laird, Venice, and Sidney Bass, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 13, 1971, Ser. No. 207,427
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 6 Claims

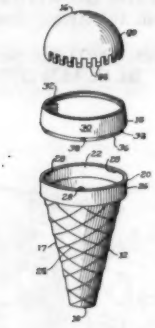
Simulated bird is made from wooden construction elements including a thick disc for a body member, a wooden hamer for

a neck and head assembly, a pair of simulated wooden open-end wrenches for feet and legs, a pair of simulated wooden hand saws for wings and a simulated wooden monkey wrench for a tail. The legs and wings are mounted on an axle which



can only be removed after the legs and wings have been removed in a predetermined sequence. The axle keys the hammer handle in position on the disc so that the axle must be removed before the hammer can be removed.

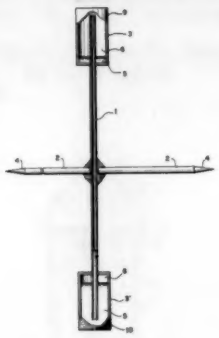
3,736,697
ICE CREAM CONE SAND TOY
Mervyn L. Keces, Highland Park, Ill., assignor to Tarrson Company, Dowaqiac, Mich.
Filed Dec. 10, 1971, Ser. No. 206,597
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **6 Claims**



A child's sand toy having individual take apart structural members which have separate utility in connection with sand play. The toy comprises a simulated ice cream cone having a lower base portion simulating the cone which serves as a container, a center portion having a sieve for sifting sand and an upper portion simulating a scoop of ice cream which serves as a sand scoop.

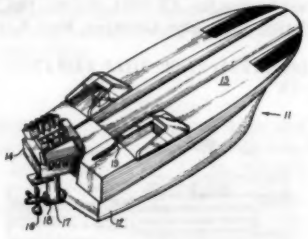
3,736,698
AMUSEMENT DEVICE
William E. Nesbitt, P.O. Box 356, Santa Ynez, Calif.
Filed Apr. 12, 1972, Ser. No. 243,231
Int. Cl. A63h *29/10*
U.S. Cl. 46—41 **16 Claims**

An amusement device is disclosed that operates on a scientific principle of pressure differential produced by heat which causes a rotor to turn. The rotor is constructed of at least one elongated tubular member having a reservoir secured around each end thereof in a liquid tight relationship. The tubular member may be provided with a pair of pivot pins centrally located along its length with one pivot pin extending outwardly from opposite sides of the member to provide an axis of rotation. Likewise, one or more rotors may be surrounded by a rim with a rolling motion being imparted to the rim during rotation of the rotor or rotors. A liquid that exhibits a high vapor pressure is provided in the reservoirs and tubular member with the remaining space therein being filled with the vapor of the liquid. Each reservoir is provided with heat collection means, the heat collection means on one reservoir



being positioned on the opposite side from the heat collection means of the other reservoir. One reservoir selectively receives heat from a source which increases the vapor pressure in the particular reservoir and displaces liquid to the opposite reservoir. Displacement of the liquid to the top reservoir produces imbalance in the rotor, causing the rotor to overturn around the pivot axis.

3,736,699
CAM-CONTROLLED BOAT
Edwin Nielsen, Oceanside, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Sept. 27, 1971, Ser. No. 184,089
Int. Cl. A63h *23/04*
U.S. Cl. 46—93 **11 Claims**

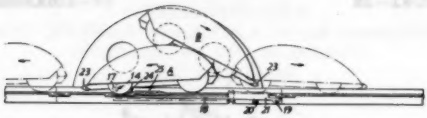


A combined propulsion and steering mechanism for a toy boat. An electric motor, geared down to drive a cam, is connected by gears to a propeller on a simulated outboard motor mounted in a special pivotal holder in the stern section of the boat. A cam follower linkage connects the cam to the pivotal holder to pivot the outboard motor and propeller according to the cam profile.

3,736,700
CAR TRACK
Rikihachiro Kitzumi, Tokyo, Japan, assignor to Cosmo Toys Manufactory Limited, Taikoktsui, Kowloon, Hong Kong
Filed Aug. 30, 1971, Ser. No. 176,004
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **4 Claims**

The invention provides a toy comprising a track adapted to support a wheeled vehicle and to guide it in a closed path, and a plurality of powered wheeled vehicles to run on said track,

each vehicle being provided at its leading end with cam means adapted to coact with the cam means of another such vehicle, when they meet head-on, and cause the leading end of one

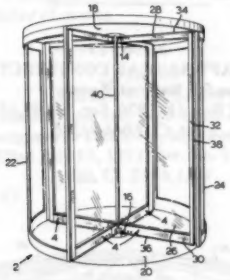


vehicle to commence to ride up and over the leading end of the other vehicle, the vehicles being shaped such that said one vehicle may ride completely over said other vehicle and down onto the track.

3,736,701
REVOLVING DOOR

Carl Jackson Rush, Agincourt, Ontario, and Horst Appelmann, Day Ridges, Ontario, both of Canada, assignors to C. J. Rush Limited, Scarborough, Ontario, Canada

Filed Jan. 7, 1972, Ser. No. 216,177
Claims priority, application Canada, Feb. 18, 1971, 105,677
Int. Cl. E05d *15/02*
U.S. Cl. 49—44 **18 Claims**



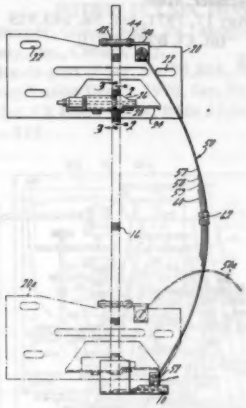
A revolving door having upper and lower mechanisms mounted in the doorway about a vertical axis, with the upper mechanisms suspended from a roof of the doorway and the lower mechanism in the floor. The door leaves are in upright and spaced apart relationship to move as a unit with the mechanisms about the vertical axis. In a preferred embodiment, air sealing means is provided to prevent excessive air movement past inner extremities of the leaves.

3,736,702
WINDOW REGULATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed July 29, 1971, Ser. No. 167,228
Int. Cl. E05f *11/42*
U.S. Cl. 49—362 **5 Claims**

An automobile window is mounted on a generally vertically extending post by means of a carrier plate which supports the window and guides it as it is moved vertically. The post includes rack teeth and a pinion is provided on the carrier plate.

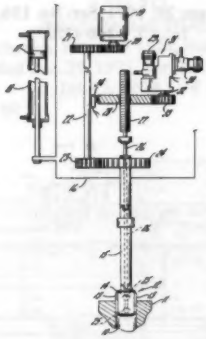


The pinion may be rotated by motor means or manually to effect generally vertical guided movement of the window.

3,736,703
MECHANISM FOR EXPANDING A HONING TOOL

Mark R. Estabrook, Rockford, Ill., and Wilfred F. W. Treder, Beloit, Wis., assignors to Barnes Drill Co., Rockford, Ill.

Continuation-in-part of Ser. No. 10,757, Feb. 12, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,430
Int. Cl. B24b *49/18*
U.S. Cl. 51—165.8 **6 Claims**



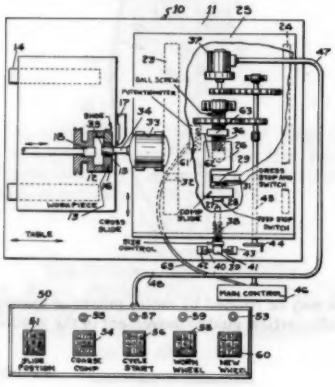
A rapid traverse motor drives a hone expanding shaft at a comparatively fast rate until the stones of the hone engage the work at which time this motor is stopped and a feed motor turns the shaft at a slower rate. Between the rapid traverse motor and the shaft and isolated from the drive motor is a resilient connection in the form of a torsion spring which prevents inertial rotation of the rapid traverse motor, once that motor has been inactivated, from being transmitted to the shaft.

3,736,704

GRINDING MACHINE

Edward G. Robillard, Cherry Valley, and Robert H. Lizotte, Leominster, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed May 17, 1971, Ser. No. 143,925
Int. Cl. B24b *49/10*
U.S. Cl. 51—165.78 5 Claims



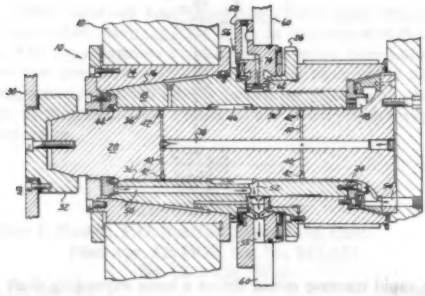
A grinding machine operative under controlled-force and controlled-rate conditions, wherein the rate of feed is controlled in accordance with the size of the abrasive wheel.

3,736,705

THRUST BEARING ARRANGEMENT FOR A DEADSHAFT MOUNTED GRINDER WHEELHEAD

Merle E. Ryan, and William D. Stremel, both of Dayton, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed June 24, 1971, Ser. No. 156,277
Int. Cl. B24b *41/00*
U.S. Cl. 51—168 6 Claims



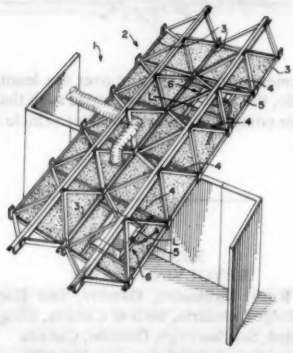
A thrust bearing arrangement is disclosed for a grinder wheelhead of the type that is rotatably mounted on a fixed central shaft, and comprises locating the thrust surfaces on a separate portion of the housing proximate the grinding wheel rather than on the fixed central shaft in order to minimize errors due to thermal expansion of the fixed central shaft.

3,736,706

SUB-DIVIDING SECONDARY SUPPORT GRID FOR A CEILING FIXTURE

Fred J. Stephenson, Lawrence, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 26, 1971, Ser. No. 192,213
Int. Cl. E04b *5/62*
U.S. Cl. 52—28 6 Claims



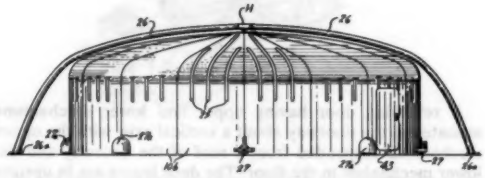
A sub-dividing secondary support grid for ceiling fixtures such as a lighting fixture or the like wherein a plurality of substantially identical parts are interlocked and rotated as a unit into position in an opening in a primary ceiling grid structure for providing a smaller opening in which the ceiling fixture is supported.

3,736,707

AIRCRAFT HANGAR CONSTRUCTION

Leo G. Neufeld, Box 35, Rantoul, Kans.

Filed Dec. 18, 1970, Ser. No. 99,459
Int. Cl. E04b *1/346*
U.S. Cl. 52—65 2 Claims



A circular aircraft hangar construction has two semicircular (when viewed from above) halves mounted on wheels and movable relative to each other. The halves move in concentric circles with the wheels appropriately spaced so as to not interfere with the movement. The halves are interconnected at their upper portion by a central hub which permits the relative movement thereof. Arcuately shaped light weight supports extend from the central hub structure over the top of the halves and finally anchor in the ground a space distance away from the vertical sides of the hangar. Each half is constructed from a plurality of sections which are easily connected and which have reinforcing rib surfaces on the upper portion thereof.

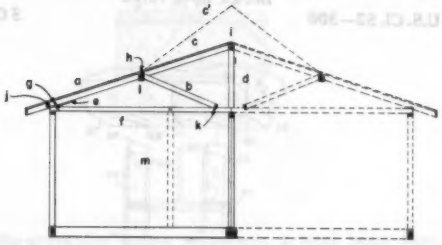
In operation, the hangar construction is completely opened by simply moving one of the halves relative to the other. An airplane may be located therein and the same side returned to its original position thereby forming the circular structure and completely enclosing the aircraft.

3,736,708

COLLAPSIBLE ROOF FOR PREASSEMBLED BUILDING

Grosvenor Chapman, Washington, D.C., assignor to Chapman & Miller Architects, Washington, D.C.

Filed Feb. 1, 1972, Ser. No. 222,665
Int. Cl. E04b *1/32, 7/16*
U.S. Cl. 52—92 2 Claims



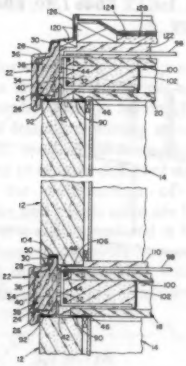
The purpose of the invention is to provide a system for usng normal and high pitched roofs for buildings preassembled in box-like units at a factory and transported to the building site over the highway or other means, wherein low road clearances and other restrictions prohibit the use of assembled units exceeding a certain height and width. The invention permits the roof, which otherwise would exceed the height limitation, to be unfolded after delivery at the building site in such a manner that it will assume the desired position with a minimum of site labor. The system is not limited to any particular structural, roof deck, or roofing material nor to a building of any particular size or number of stories.

3,736,709

BUILDING SYSTEM

Carl Koch, Concord, and Joel Leon Lipshutz, Lexington, both of Mass., assignors to Techcrete, Inc., Boston, Mass.

Filed July 13, 1971, Ser. No. 162,036
Int. Cl. E04b *1/04*
U.S. Cl. 52—97 8 Claims



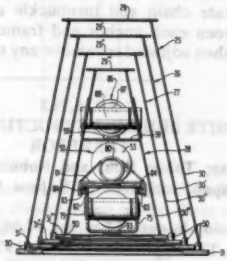
A building system includes a precast bearing wall, a series of precast floor planks resting on the bearing wall and structure above the bearing wall. Precast junction components are disposed in the space between the bearing wall and the structure above and contribute to the sealing of that joint.

3,736,710

FOUR-SECTION FULLY HYDRAULICALLY OPERATED CRANE BOOM HAVING THREE INDIVIDUALLY SUPPORTED SINGLE PISTON RAMS CONTAINED WITHIN FLY SECTION

Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 75,886, Nov. 28, 1970. This application Dec. 3, 1970, Ser. No. 94,812
Int. Cl. E04h *12/34*; B66c *23/04, 23/54*
U.S. Cl. 52—115 12 Claims



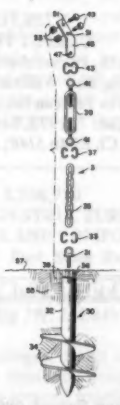
A four-section fully hydraulically operated telescoping crane boom is constructed so that the three operating rams of the boom can be contained within the boom fly section and are independently supported and operated. Single piston rams are utilized throughout. The ram which interconnects the base section and the inner mid-section of the boom is reversed from the conventional arrangement with the rod end of this ram anchored to the base section and the cylinder end cantilevered forwardly from a rear pivotal connection with the inner mid-section of the boom and having a sliding support and guide means on its forward end engaging a core or box forming a part of the outer mid-section of the boom. As a result of the arrangement of the rams the vertical heights of the several boom sections can be made nearly equal and the amount of metal utilized in the boom is minimized while maintaining maximum rigidity.

3,736,711

TRAILER ANCHORS

Lloyd E. Thornbrugh, P.O. Box 1124, Natchez, Miss.

Filed Dec. 29, 1971, Ser. No. 213,681
Int. Cl. E02d *5/74*
U.S. Cl. 52—149 10 Claims



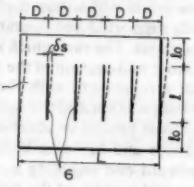
Various different types of anchors and an anchor system using these anchors for house trailers and the like are dis-

closed. One of the anchors disclosed is designed for use in a concrete slab and the others are designed to meet specific soil c0nditions. Thus, of the various different anchors disclosed, the one chosen for a given anchor system depends upon either the soil conditions where the trailer is located or the existence of a concrete trailer pad. In addition, the anchors are designed so that they can be driven in place by means of power tools. The anchor system comprises a plurality of anchors and a chain and turnbuckle arrangement associated with each anchor. Brackets are attached to the trailer frame at various different points along the frame. The anchors are driven into the ground or concrete as the case may be along the trailer and a separate chain and turnbuckle arrangement is connected between each anchor and frame bracket. The turnbuckles are then adjusted to remove any slack in the chain.

3,736,712
COMPOSITE BUILDING STRUCTURE AND WALLS THEREFOR

Kiyoshi Muto; Takao Itoh, and Nobutsugu Ohmori, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 17,062, March 6, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,964
Int. Cl. E04h *9/02*
U.S. Cl. 52—167 **16 Claims**

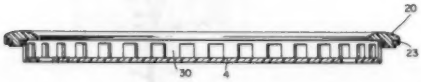


A composite flexible-rigid building structure comprising a flexible skeleton structure and a plurality of bearing wall members having slits formed therein. The overall composite building structure normally behaves as a rigid structure for load smaller than a certain predetermined magntidue but transfers to a flexible structure upon occurrence of an extremely heavy load in excess of said magnitude. Each slit wall member normally acts as a rigid frame structure, and has a large ductility so as to absorb a large amount of seismic energy after being yielded at a certain predetermined load before complete failure.

3,736,713
CARPET TRIM

Charles T. Flachbarth, Parkersburg, W. Va.; Robert W. Hadfield, Belpre, Ohio, and William H. Harding, Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.

Filed Jan. 7, 1972, Ser. No. 216,163
Int. Cl. E04b *5/48;* **A47g** *27/02*
U.S. Cl. 52—221 **2 Claims**

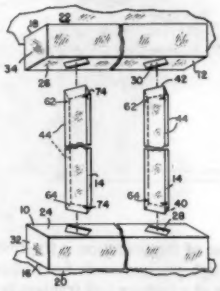


Carpet trim having flanges overlying the edges and flush with the carpet surface and supported so that when stepped on will yield or move down similarly as the carpet yields but without lateral movement (which otherwise could dislodge the edges or upset the pedestrian) and then return to flush position when the foot is removed. The support for the flanges provides for gradual lowering of the flush position as the carpet mats or wears.

3,736,714
WALL STUD SYSTEM

J. Fred Brenner, Box 161 R.D. 3, Kennett Square, Pa.

Filed Apr. 26, 1971, Ser. No. 150,870
Int. Cl. E04h *12/22*
U.S. Cl. 52—300 **5 Claims**

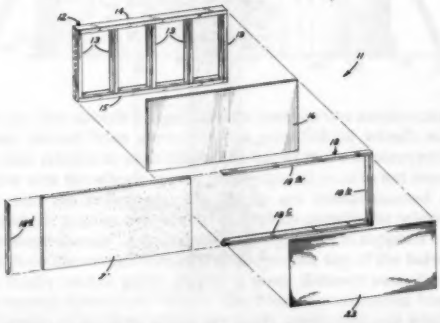


A wall stud system comprising a plurality of horizontal floor and ceiling beams arranged in parallel spaced relationship and a plurality of vertical hollow studs extending between the floor and ceiling beams. Each stud is formed to a similar cross-sectional configuration and each floor and ceiling beam is provided with vertically aligned openings to receive the top and bottom of the studs therein. Each aligned opening is positioned in rotative angular relation to the final position of the stud when installed. The studs are provided with wedge-shaped notches at all corners about the periphery of the stud near the tops and bottoms thereof to lock each stud into the beam material after insertion and rotation through the predetermined angle.

3,736,715
PREFABRICATED WALLS

Leland J. Krumwiede, Hibbing, Minn., assignor to Nomeco Building Specialties, Inc., Hibbing, Minn.

Filed Sept. 15, 1971, Ser. No. 180,693
Int. Cl. E04b *1/80;* **E04c** *2/26*
U.S. Cl. 52—309 **10 Claims**



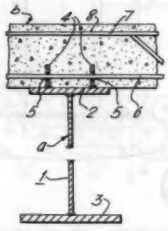
A prefabricated load-supporting building panel is disclosed. The panel consists of a metal stud frame to which a sheet of moisture proof gypsum board is affixed. A thickness of molded polystyrene, supported by a peripheral casing attached to the frame, is bonded to the gypsum board. Exterior finish for the panel consists of synthetic plastic which is trowled onto a glass fiber fabric bonded to the polystyrene.

3,736,716

MEANS FOR REDUCING SLIPPAGE OF STEEL BEAM RELATIVE TO CONCRETE SLAB

Akira Nishimura, Sakyo-ku, Kyoto, Japan, assignor to Long Span Bridge Consultants Inc., Chuo-ku, Tokyo, Japan

Filed Apr. 7, 1971, Ser. No. 132,186
Claims priority, application Japan, Apr. 11, 1970, 45/30503
Int. Cl. E04b *1/38*
U.S. Cl. 52—334 5 Claims



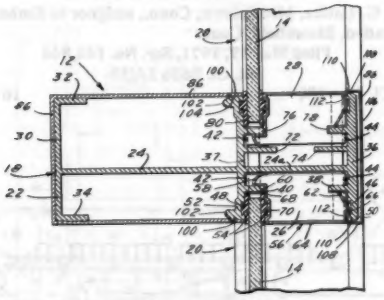
A slip-preventive means to prevent a steel beam from slipping relative to a concrete slab in a bridge or the like structure, which includes one or more ribs welded to the upper flange of the steel beam, the ribs being connected to reinforcing iron bars in the concrete slab.

3,736,717

WINDOW AND PANEL FRAME STRUCTURE

Walter J. Farley, 2328 Montera Drive, Hacienda Heights, Calif.

Filed June 21, 1971, Ser. No. 155,109
Int. Cl. E04b *2/88*
U.S. Cl. 52—476 10 Claims



A frame structure for supporting window and panel materials, wherein the frame structure comprises a vertical mullion assembly and a horizontal transom assembly joined together to form various sized frame-supporting structures. Both the mullions and transoms are formed from elongated channel-like extrusions adapted to receive different sized windows and panels, particularly for construction of outer walls of buildings. The windows and panels alike are locked into place by a snap-in casing that is accommodated in both the mullions and transoms. The transom assembly is secured in and supported by the upright mullion assembly, which when assembled together form a box-like frame structure having the windows and panels supported therein.

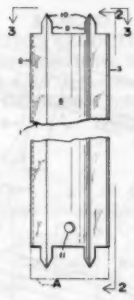
3,736,718

BUILDING CONSTRUCTION MEMBER

Joseph Sylvan, 27216 Red River Drive, Lathrup Village, Mich.

Filed July 13, 1972, Ser. No. 271,296
Int. Cl. E04c *3/07*
U.S. Cl. 52—720 2 Claims

An elongated stud or beam, formed of sheet material, and provided at each end with protruding sharply pointed tabs. It is intended that the stud would be disposed between upper and lower horizontally elongated wooden, building construction members, with the sharply pointed tabs imbedded in said wooden members to resist withdrawal therefrom, and to further resist lateral displacement of the sheet material stud relative to the elongated wooden members.

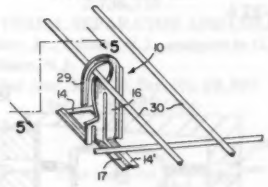


3,736,719

REINFORCING ROD CHAIRS

Marcus Sylvester Wise, 1405 S. Liberty Street, Muncie, Ind.

Filed July 22, 1969, Ser. No. 843,320
Int. Cl. E04c *5/18*
U.S. Cl. 52—677 6 Claims



A support for reinforcing bar-mats used in continuously reinforced pavements and other building construction. When the bar-mat is laid on the ground the support chair which is provided with an open slot is laid over a bar forming a part of the mat. Thereupon, when the bar-mat is raised into its required position above the ground, the bar will slide up the slot to a point where it will rest in a cradle forming a part of the support or chair. Should the bar-mat be raised before the chair is laid over a bar it can be dropped vertically downwardly over a bar and the bar will slide up the slot to the point where it will rest in the cradle. The support, known in the art as a rod chair, is formed by stamping the same from sheet metal.

3,736,720

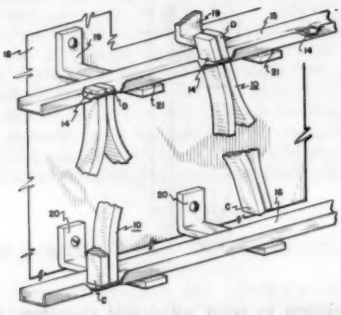
ORNAMENTAL DESIGN STRUCTURES AND METHOD OF MAKING THE SAME AND COMPONENTS THEREOF

Ellis DeLoy Larson, 225 East State Road, Pleasant Grove, Utah

Filed Feb. 18, 1971, Ser. No. 116,425
Int. Cl. B23p *15/12*; E04h *17/16*
U.S. Cl. 52—741 1 Claim

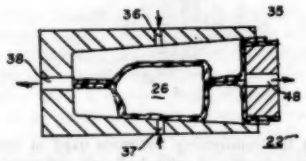
Ornamental grillwork designs, design combinations, railings and columns wherein an elemental design structure used includes press-formed parts secured together at corresponding, contiguous ends. At least one set of ends is constructed and arranged for insertion in a positioning aperture, to accommodate ease of attachment as by welding. Multiple convolu-

tions and intricate designs are possible, both as to individual design pairs and to also as to composite designs wherein respective pair-structures are placed contiguously together.



Fabrication, thus, becomes greatly simplified and possible breakage and damage during transit, minimized. Improved methods of fabrication of both elemental designs and composite structures are disclosed.

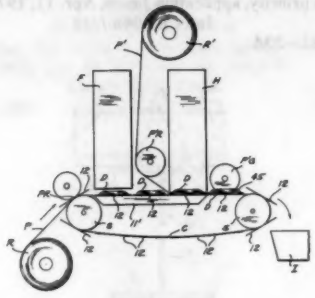
3,736,721
METHOD FOR MAKING A SKIN PACKAGE USING A SINGLE FILM WEB
Robert O. Wolfelsperger, 23 Glenroy Road, Fairfield, N.J.
Filed May 10, 1971, Ser. No. 141,520
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **5 Claims**



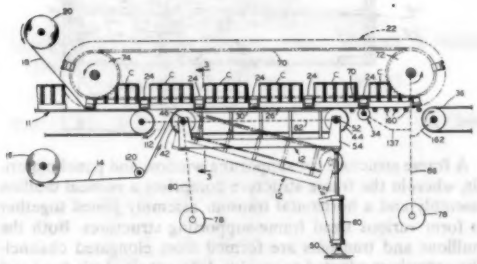
A method and apparatus is provided for forming a skin package particularly for food products, hardware and the like in which a single film web is arranged around the product and by pressure differential is formed around the product. A pair of U-shaped chamber members is disposed to slidably engage the open ends of each other to form a sealed chamber with the film retained against or nearly against three sides of the chamber. After the film has been brought to a heated heat-sealable condition, atmosphere or low pressure air is used to push the film tightly around the product and into sealing condition with facing portions of the same film.

3,736,722
PACKAGING MACHINE
Harry Rosenberg, Springfield, N.J., assignor to New Jersey Machine Corporation, Hoboken, N.J.
Filed July 1, 1971, Ser. No. 158,744
Int. Cl. B65b *63/02, 9/04*
U.S. Cl. 53—124 E **5 Claims**

The machine is provided with a conveyor provided with a series of platens having package-shaped recesses for carrying a first strip of paper initially past a first product discharge and compressing station where the product is given the desired shape, and then past a second station where a second strip of paper deposited upon the first paper strip and the compressed product is heat sealed to the first paper strip and the package is completed and separated from the two strips.



3,736,723
FILM WRAPPING MACHINE
Horst G. Lattke, Middletown, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed May 19, 1971, Ser. No. 144,844
Int. Cl. B65b *51/30*
U.S. Cl. 53—180 **16 Claims**

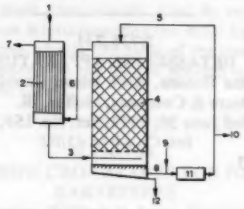


A film wrapping machine is disclosed for enveloping articles in a transparent, shrinkable film. The articles are translated serially onto a conveyor while a first film is fed between the articles and the conveyor and a second film is laid over the articles. A flight bar carrier folds or tucks the second film between the articles and presses the second film into contact with the first film. Heat is applied to the areas of contact between the two films so that the films become welded together in one or more seams as the articles and films are transported along the conveyor. A cutting mechanism severs the films between articles along or adjacent the welded seams. The separated articles enveloped by the films are then accelerated to a shrink tunnel which heats the films and causes them to shrink tightly against the article.

3,736,724
METHOD OF DRYING AND DEMERCURIZING HYDROGEN

Ewald Wygasch, 10 Eberstrasse, 6700 Ludwigshafen, Germany

Filed Jan. 13, 1972, Ser. No. 217,513
Int. Cl. B01d 53/14
U.S. Cl. 55—29 2 Claims

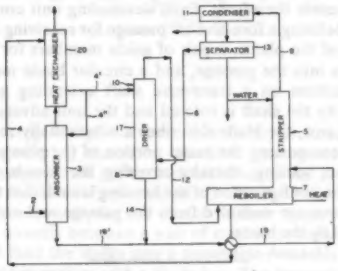


Hydrogen produced in the electrolysis of alkali metal chlorides by the amalgam process is dried and demercurized by direct cooling with aqueous solutions of alkali metal hydroxides having a temperature of below 0°C.

3,736,725
APPARATUS AND METHOD FOR DRYING GAS BY GLYCOL SCRUBBING

Carl E. Alleman, and William F. Tuckett, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 13, 1971, Ser. No. 143,017
Int. Cl. B01d 53/14
U.S. Cl. 55—32 10 Claims



Apparatus and method for drying a gas by passing said gas stream through an absorber where water and some hydrocarbons are removed therefrom, passing the absorbent and removed water and hydrocarbons to a stripping zone, removing the hydrocarbons and water from the absorbent, separating the water and hydrocarbons one from the other and drying and recycling the hydrocarbons to the stripping zone for stripping water from the absorbent flowing therethrough.

3,736,726
PROCESS FOR THE REMOVAL OF DIMETHYL SULFATE FROM GASES BY ADSORPTION ON ACTIVE CHARCOAL

Richard Grimm; Willi Herzog, and Rudolf Lademann, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals, Meister Lucius & Bruning, Frankfurt am Main, Germany

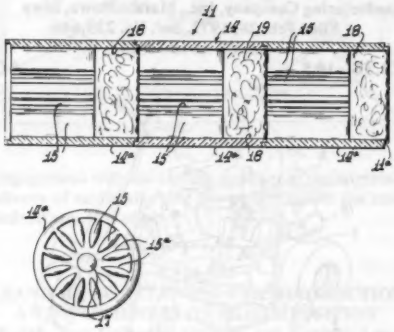
Filed Dec. 20, 1971, Ser. No. 210,049
Claims priority, application Germany, Dec. 22, 1970, P 20 63 071.1
Int. Cl. B01d 53/04
U.S. Cl. 55—73 1 Claim

Dimethyl sulfate is removed from gases, e.g., from indoor or exhaust air. The gases are conducted through active charcoal to absorb the dimethyl sulfate. The active charcoal is regenerated with a base, then washed with water and re-used for the absorption of dimethyl sulfate without any intermediate drying.

3,736,727
AIR POLLUTION REDUCTION SYSTEM

Walter Shriner, 1409 Stevenson Drive, Springfield, Ill.

Filed Oct. 6, 1971, Ser. No. 186,857
Int. Cl. B03c 3/30
U.S. Cl. 55—103 11 Claims

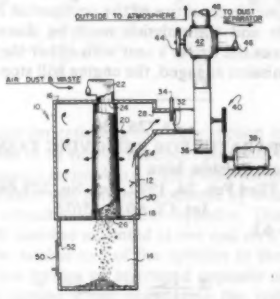


An air pollution reduction system embodying dielectric means to induce electrostatic forces in the path of a polluted fluid stream to cause precipitation of solids in said stream.

3,736,728
WASTE MATERIAL SEPARATOR AND COLLECTOR

Edwin A. Kleissler, Jr., Edison, N.J., assignor to G. A. Kleissler Company, Edison, N.J.

Filed Aug. 3, 1970, Ser. No. 60,307
Int. Cl. B01d 46/04
U.S. Cl. 55—341 16 Claims



An enclosure is provided having a substantially horizontal, centrally disposed partition plate or member for dividing the interior volumn thereof into an upper plenum chamber and a lower collecting bin or chamber. Interiorly of the plenum chamber are fixedly supported one or more vertically oriented, tapered, tubular shaped, filter screen elements each one of which communicates at its upper end with an intake duct through a port or opening in the upper wall member of the enclosure, and communicates at its lower end with the collecting bin through an aperture in the partition plate or member. A mixture of waste materials and dust impregnated air or gas is delivered into the enclosure through the intake ducts whereupon the dusty air passes laterally through the mesh of the screen elements and into the surrounding plenum chamber. The escaping dust laden air is then exhausted to the

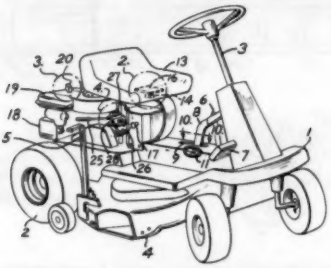
outside through an exhaust fan and duct means. The larger pieces of waste material, however, are constrained or trapped by the screen elements and under the force of gravity settle or fall downwardly through the openings in the partition plate whereupon they are deposited in the collection bin. In an alternate preferred form of the invention, means are provided in lieu of the collecting bin for directly conveying the separated waste materials to a machine for utilization therein.

3,736,729

SAFETY INTERLOCK SYSTEM

Clifford D. Peterson, Marshalltown, Iowa, assignor to Cooper Manufacturing Company, Inc., Marshalltown, Iowa

Filed Feb. 28, 1972, Ser. No. 229,646
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.5 **4 Claims**



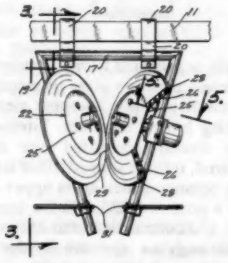
A safety interlock system for a riding lawn mower powered by an internal combustion engine which includes a switch responsive to the engagement of the transmission, a switch responsive to the engagement of the cutting blade, a switch responsive to the operation of the engine and an ignition switch. The transmission, cutting blade and engine switches are in a circuit connected to ground whereby the ignition switch must be on and the transmission and cutting blade disengaged to start the engine. Also disclosed is an additional switch responsive to the occupation of the driver's seat disposed in parallel circuit with the engine switch, whereby, to start the engine, irrespective of the occupation of the seat, the cutting blade and transmission must be disengaged. If the operator leaves the driver's seat with either the cutting blade or the transmission engaged, the engine will stop.

3,736,730

APPARATUS FOR REMOVING TASSELS

Ora B. Dobson, Ralston, Iowa

Filed Feb. 24, 1972, Ser. No. 229,047
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 **5 Claims**



Apparatus for removing tassels from plant stalks is disclosed herein. The apparatus includes a pair of wheels mounted on a framework at an angle one to the other with an area of contact between portions of the two wheels. One of the wheels is rotated by suitable power means and the other wheel preferably is rotated by frictional contact with the rotated wheel. The wheels are formed, in profile, in the shape of a frustum, and the area of contact between the wheels results from mounting the wheels such that the side surfaces of the frustums are adjacent one another at the rear of the apparatus.

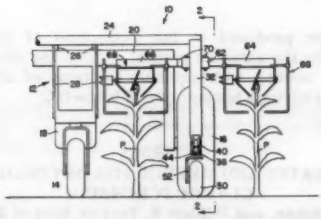
The wheels preferably have a spring wire skeletal framework, and a resilient material forms at least the side surfaces of the wheel.

3,736,731

DETASSELING APPARATUS

Harold Valentine Hansen, Rock Island County, Cordova, Ill., assignor to Deere & Company, Moline, Ill.

Filed June 30, 1971, Ser. No. 158,260
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 **9 Claims**



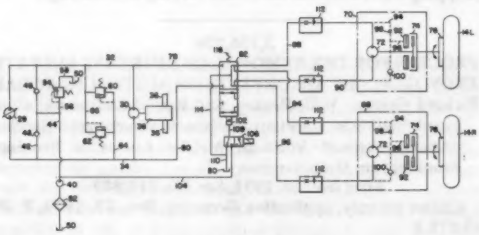
Apparatus for mechanically removing the tassels from corn plants in a plurality of adjacent rows, the apparatus including a mobile frame adapted to advance along the rows and a plurality of individual detasseling units adjustably carried by the frame for receiving the plants in the adjacent rows and severing the tassels therefrom. Each detasseling unit consists of a housing defining a fore-and-aft passage for receiving the upper portions of the plants, a pair of guide members for directing the plants into the passage, and a circular blade mounted in canted fashion on a transverse shaft extending across the passage. As the shaft is rotated and the unit advanced along the plant row, the blade describes a substantially rectangular swath encompassing the tassel portion of the plants received within the housing, thereby severing the tassels from the plants. The configuration of the housing is such that the leaves of the plants are excluded from the passage and are thus not contacted by the blade.

3,736,732

AUXILIARY DRIVE SYSTEM FOR COMBINES

Mearl James Jennings, Bernard Francis Vogelaar, and Kenneth Robert Lamp, all of Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Oct. 12, 1971, Ser. No. 188,340
Int. Cl. A01d *41/02*
U.S. Cl. 56—10.9 **9 Claims**



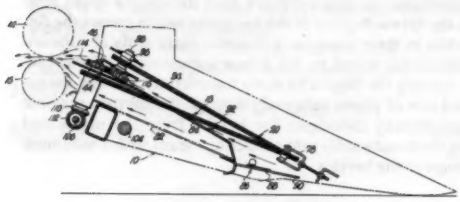
The steerable rear wheels of a hydraulically driven combine are provided with hydraulic motors which are connected in

parallel with each other and in parallel with the motor for the main drive wheels. A directional flow control valve permits the hydraulic motors for the steerable wheels to be optionally connected and disconnected from the main pump. Pressure compensated flow control valve means limit the maximum flow of fluid to the hydraulic motors for the steerable rear wheels. When the rear wheel drive system is in use, the torque applied to the steerable rear wheels is proportional to the torque applied to the main drive wheels and spin-out of either one or both of the steerable rear wheels will not result in loss of power to the main drive wheels. Also, by varying the ratio of the transmission interconnecting the main hydraulic motor with the main drive wheels, the ratio of the torque applied to the main drive wheels to the torque applied to the steerable rear wheels will be varied.

3,736,733
THREE-ROW CROP HEADER FOR FORAGE HARVESTERS

Ferol S. Fell, Newton; William D. Long, Hesston, and Kenneth R. McMillen, Moundridge, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Nov. 4, 1970, Ser. No. 86,767
Int. Cl. A01d *45/02*
U.S. Cl. 56—98 **2 Claims**



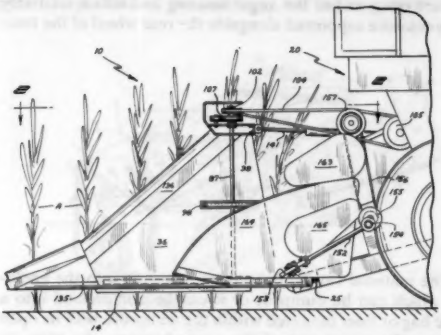
A row crop forage harvester has three, inclined pairs of pronged gathering chains on a header attachment for rearward conveyance of stalks that are severed by a transverse cutter at the lower front end of the header. The stalks are delivered rearwardly by the chains at their upper, rear ends butt first directly between a pair of transverse rolls that compress and feed the stalks into a transverse rotatable reel-type chopper cooperating with a shear bar. The severed butt ends of the stalks slide upwardly along ramps parallel to and disposed beneath the chains. All of the chains and their ramps terminate at their upper ends within substantially the same vertical plane immediately ahead of the rolls. At their discharge ends a pair of medial chains are driven by and overlap adjacent chains, the latter of which diverge toward the cutter.

3,736,734
ROW CROP HEADER ATTACHMENT

Raymond F. Pavel, R.R., Scotland, S. Dak.

Continuation-in-part of Ser. No. 81,672, Oct. 19, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,118
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 **11 Claims**

An apparatus for harvesting a crop such as a sunflower seed crop with said apparatus being formed as an attachment to a conventional combine and which embodies the use of spaced pairs of forwardly extending tapered hood members respectively arranged and constructed to carry cooperating pairs of endless brush belts having a run therebetween, said belts being disposed to travel substantially in a horizontal plane, the stalks of plants being engaged and drawn into the harvester by the brush belts which hold the stalks in a relatively stable position

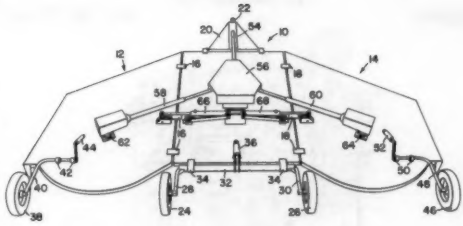


until engagement with the cutting member of the combine and the delivery of said stalks into the combine with the result of very little, if any, loss of seed.

3,736,735
MECHANISM FOR RETAINING THE WING SECTION OF AN IMPLEMENT IN ITS RAISED POSITION

John Kulak, Port Colborne, Ontario, and Kenneth Lawrence Kirkpatrick, Welland, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed July 14, 1971, Ser. No. 162,429
Int. Cl. A01d *55/28*
U.S. Cl. 56—13.6 **16 Claims**



A mechanism for retaining the wing section of an agricultural implement in its raised, transport position, the wing section being hingedly secured to a main frame section and movable between raised and lowered positions by means of an extensible and retractable hydraulic cylinder. The mechanism includes a link member mounted at one end on a pin pivotally connecting the anchor end of the cylinder to the main frame section, the link having an apertured opposite end biased to automatically engage a pin connecting the rod end of the cylinder to the wing section when the latter is moved into its raised position. A manually-operated lock mechanism is provided to lock the apertured end of the link out of engagement with the pin, thereby permitting the wing section to return to its lowered position.

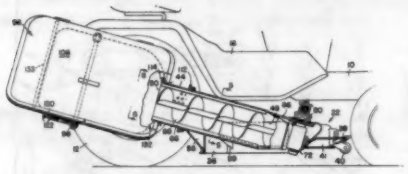
3,736,736
BALING ATTACHMENT FOR LAWN MOWERS

Herbert Arthur Myers, Coal Valley, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 6, 1972, Ser. No. 231,890
Int. Cl. A01d *14/02*
U.S. Cl. 56—14.5 **27 Claims**

A lawn and garden type tractor has a belly-mounted rotary lawn mower with a side discharge opening communicating

with the forward end of a generally fore-and-aft tubular auger housing. An auger is journaled in the housing and is rotated by a drive connected to and driven by the mower drive, so that it moves material discharged by the mower unit through the rearward open end of the auger housing and into a relatively large enclosure supported alongside the rear wheel of the tractor. The material can be compressed directly into the enclosure, which can be dumped, or it can be compressed into a plastic bag or liner mounted within the enclosure with its open end over the outlet end of the auger housing, the bags, or liners being removable from the enclosure when they are filled with the compacted material.



3,736,737

CONTROL DEVICE FOR RAISING AND LOWERING THE CUTTER MECHANISM OF HARVESTERS

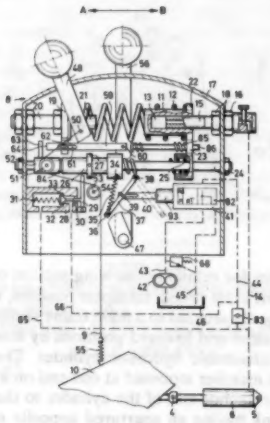
Gustav Schumacher, II, and Gunter Schumacher, both of Haus near 51, 5231 Eichelhardt, Germany

Filed May 21, 1971, Ser. No. 145,621

Claims priority, application Germany, Nov. 18, 1970, P 20 56 931.7

Int. Cl. A01d *67/00*

U.S. Cl. 56—208 **4 Claims**



A hydraulic control device for raising and lowering the cutter mechanism of a harvester, for example a combine harvester, which device is operable by manual actuation and by the hydraulic pressure in a displacement cylinder of the cutter mechanism through a control cylinder acting against a counterforce, and which device is for installation on a part of the combine harvester, preferably the drivers platform, which constitutes a stationary part as opposed to the movable cutter mechanism, wherein the arrangement of the actuating lever of the "raise" valve and/or the "lower" valve relative to the control cylinder, which acts directly or through intermediate links, depends on the position of the cutter mechanism, and this arrangement is variable with reference to the position of the cutter mechanism for adjusting the required working position of the cutter mechanism.

3,736,738

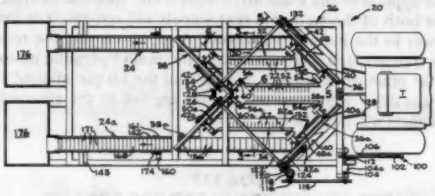
ROW CROP HARVESTER

James P. Carr, East Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 18, 1971, Ser. No. 125,675

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **11 Claims**



A mobile harvester includes a pair of endless stripper conveyors disposed on opposite sides of the longitudinal centerline of a ridge containing two rows of strawberries or the like. Each conveyor having a lower run moving rearwardly and outwardly relative to the harvester. A plurality of longitudinally extending rows of stripping fingers are individually supported on each conveyor by parallelogram linkages which allow the fingers to float when contacting the ground. The shanks of the fingers are maintained substantially vertical throughout their movement and the conveyors are each driven at a speed relative to the forward speed of the harvester which causes the fingers while in their lower runs to move rearwardly at substantially the same speed as the forward movement of the harvester causing the fingers to move transversely through the associated row of plants outwardly through the shortest possible distance thereby dislodging the berries from the plants and moving them outwardly into collecting means with a minimum of damage to the berries.

3,736,739

WINDING MACHINE

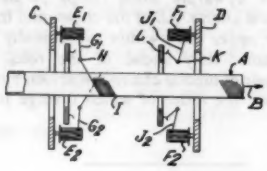
Marc Walter, Buc, France, assignor to Agence Nationale De Valorisation De La Recherche Anvar, Neuilly-sur-Seine, France

Filed Dec. 8, 1971, Ser. No. 205,896

Claims priority, application France, Dec. 11, 1970, 7044649

Int. Cl. B65h *81/08*

U.S. Cl. 57—13 **6 Claims**



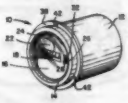
Two parallel and coaxial flange plates which are driven separately in rotation carry reels mounted in uniformly spaced relation about the common axis of the flange plates. Threads or ribbons are delivered from the reels and wound on a cylindrical element which is displaced continuously along the axis of the flange plates. Each flange plate is associated with a parallel and coaxial annular member which is mounted upstream of the reels with respect to the direction of displacement of the cylindrical element. The annular members are subjected to a relative movement of rotation in the direction opposite to the movement of the corresponding flange plates and means are provided on the annular members for attaching and cutting the ends of the threads or ribbons of the reels.

3,736,740

ELECTROMAGNETIC TIMING MECHANISM

Stuart M. Pindell, Jr., Winooski, Vt., assignor to Novox, Inc., Winooski, Vt.

Filed Oct. 22, 1971, Ser. No. 191,741
Int. Cl. G04c 3/00, 3/04
U.S. Cl. 58—23 D 31 Claims



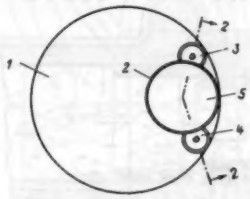
A timing mechanism employs a rotary oscillatory member which is biased toward a neutral position and is pulsed electromagnetically in one direction about its axis so that it oscillates at a selected natural frequency. The timed oscillations of the member may be transformed into unidirectional motion of a second rotary member. This second member may then drive counting wheels which provide a visual indication of time as measured from a selected time base.

3,736,741

DEVICE FOR SECURING AN ELECTRICAL CELL IN A TIMEPIECE MOVEMENT

Daniel Paratte, Neuchatel, Switzerland, assignor to Montres Rolex S.A. Dussaud, Geneve and Manufacture Des Montres Rolex S.A., Bienne, Switzerland

Filed Nov. 4, 1971, Ser. No. 195,566
Claims priority, application Switzerland, Nov. 27, 1970, 17617/70
Int. Cl. G04c 3/00; G04b 37/00
U.S. Cl. 58—23 BA 4 Claims



An electrical cell is secured in a trough shaped housing in a plate of a timepiece movement by a device located at the periphery of the housing. Said device comprises at least one member such as a washer with a cut-away edge held by means of a screw which moves it, from a rest position in which the cell is free, downwardly and inwardly into the housing to an operative position biting into the wall of the cell which is firmly held against a contact in the housing.

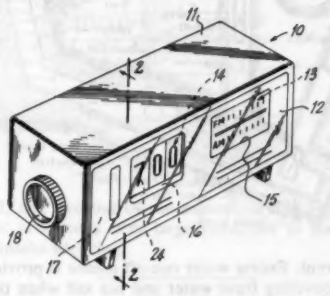
3,736,742

RADIO COMBINED WITH A DIGITAL CLOCK

Osamu Mabuchi, Dobbs Ferry, N.Y.; Yoshitaka Toshima, Sagamihara, and Takashi Sato, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1972, Ser. No. 231,283
Claims priority, application Japan, Mar. 5, 1971, 46/14364
Int. Cl. G04b 19/30
U.S. Cl. 58—50 A 3 Claims

A clock having an indicating assembly with phosphorescent indicia for emitting visible light when exposed to ultraviolet radiation, and preferably combined with a radio receiver, is provided with a light tube which emits ultraviolet radiation directed against the phosphorescent indicia. Such light tube is preferably disposed between the indicating assembly of the clock and a filter plate which bars the passage of ultraviolet radiation therethrough towards the viewer. The light tube desirably includes a sealed tubular envelope interiorly coated with a phosphor for emitting the ultraviolet radiation when excited by a discharge between main electrodes within the opposite end portions of the envelope, and auxiliary electrodes



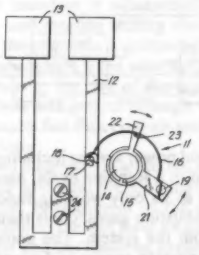
are disposed adjacent the main electrodes for the generation of ions therebetween by which the main discharge is promoted. The auxiliary electrodes are preferably connected with respective resistors which are disposed adjacent the end portions of the envelope for heating the elctrodes therein.

3,736,743

TIMEPIECE REGULATING MECHANISM

Kenichi Koike, Suwa-gun, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 180,040
Claims priority, application Japan, Sept. 14, 1970, 45/80021; Dec. 28, 1970, 45/120061; Dec. 29, 1970, 45/128120
Int. Cl. G04b 17/14
U.S. Cl. 58—109 14 Claims



In a timepiece driven by a vibrator, a spring having a spring constant much lower than that of the vibrator is coupled to the vibrator. The effective length of the spring is adjustable by varying the point of contact between a regulating mechanism and the spring. Adjustment of the vibration frequency can be effected from the exterior of the timepiece and can be carried out step-wise.

3,736,744

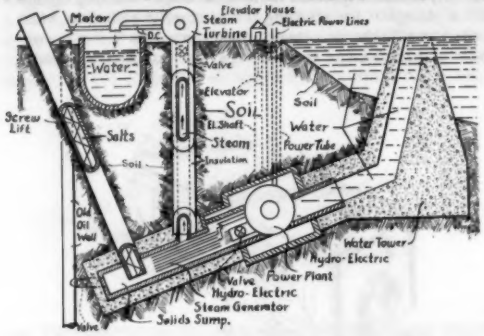
PROPELLANTS FROM EARTH'S HEATS

Wayne Bailey, Schaghticoke Hill, Schaghticoke, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,331
Int. Cl. F03g 7/00; F01d 13/00
U.S. Cl. 60—6 10 Claims

A power plant apparatus combination including a first hydroelectric prime mover positioned deep in the earth furnishing water and electricity to a steam boiler supplying

steam to a second prime mover through a heat insulated steam pipe; the second prime mover is also equipped to generate



electric current. Excess water run-off means is provided and units for recovering fresh water and sea salt when these are desired can also be provided.

3,736,745

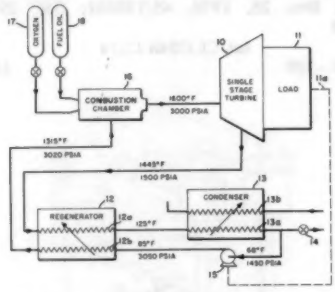
SUPERCRITICAL THERMAL POWER SYSTEM USING COMBUSTION GASES FOR WORKING FLUID

Horace E. Karig, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 9, 1971, Ser. No. 151,331

Int. Cl. F02n *25/06*

U.S. Cl. 60—39.02 **8 Claims**



A supercritical thermal power system including components conventionally included in a Rankine cycle, uses a portion its own combustion gases as its only working fluid. The system recirculates all the combustion gases, cools them, and purges the excess amounts from the system. The cooled remainder portion is reheated to conserve energy and mixed with oxygen and fuel in the combustion chamber to lower the temperature of the burning gases to pass cooler combustion gases to a turbine for minimizing failure otherwise due to excessive heat in the system. By using a portion of the system's own combustion gases as the only working fluid, the system's overall efficiency is significantly increased over contempory systems.

3,736,746

RECIRCULATING ANNULAR SLOT FUEL/AIR CARBURETING SYSTEM FOR GAS TURBINE COMBUSTORS

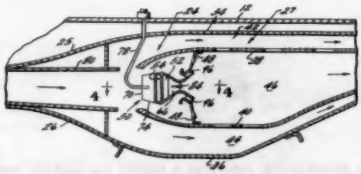
Thomas L. DuBell, and Jack R. Taylor, both of Cincinnati, Ohio, assignors to General Electric Company

Filed Aug. 13, 1971, Ser. No. 171,639

Int. Cl. F02c *3/24*

U.S. Cl. 60—39.36 **13 Claims**

A combustion system for a gas turbine engine is equipped with a fuel carbureting device which delivers a uniform fuel/air mixture to the primary combustion zone through a continuous annular exit slot. Fuel and air are provided as a continuous tangential flow to an annular premixing chamber, which is configured so as to provide a throat, a diffuser zone, and the annular exit slot. Radial swirl vanes are positioned within the premixing chamber to turn the fuel/air mixture axially, and counterswirl vanes surround the exit slot to provide additional primary combustion air to rapidly mix with the fuel/air mixture and to provide flame stabilization regions around the entire annular combustion chamber. Recirculation of the hot gases in the primary combustion zone is achieved by providing a diffuser zone upstream of the exit slot with a bluff body splitter for radially turning the fuel/air mixture.



3,736,747

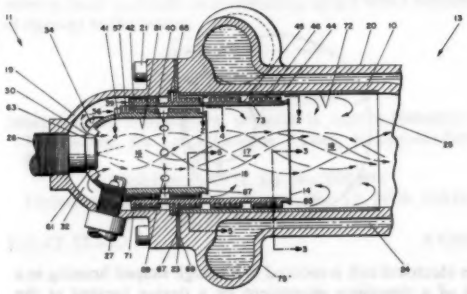
COMBUSTOR

Glenn B. Warren, 1361 Myron St., Schenectady, N.Y.

Filed July 9, 1971, Ser. No. 161,179

Int. Cl. F02c *3/00, 7/12*

U.S. Cl. 60—39.65 **14 Claims**



A combustor is provided having a housing with a liquid coolant jacket and having a combustion chamber which is divided into separate combustion zones. Each zone is regeneratively cooled by members disposed within the combustor which are arranged to swirl the process air and to contain and cool the flame. The heat removed from the flame is returned to the process air before it is supplied for staged combustion. The combustor is capable of operating at high temperatures, high equivalence ratios and high efficiencies.

3,736,748

SPARK IGNITER FOR COMBUSTION CHAMBERS

Robert C. Walker, Glastonbury, Conn., and Sidney S. Wyde, Monticello, N.Y., assignors to United Aircraft Corporation, East Hartford, Conn.

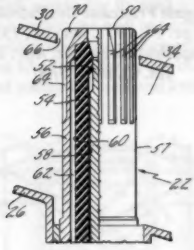
Filed Apr. 7, 1972, Ser. No. 242,046

Int. Cl. F02c *7/18, 7/26*

U.S. Cl. 60—39.67 **11 Claims**

A spark igniter adapted to project into a combustion chamber and having a plurality of circumferentially spaced,

axially extending grooves formed within its outer sleeve. The grooves are adapted to carry cooling fluid surrounding the



sleeve over the end of the igniter exposed to the hot combustion gases to cool the end.

3,736,749

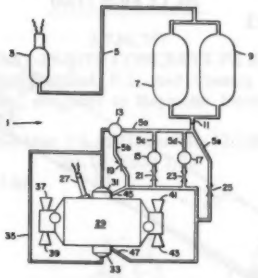
OPEN LOOP ON-DEMAND VARIABLE FLOW GAS GENERATOR SYSTEM WITH A TWO-POSITION INJECTOR

Willi K. Kretschmer, Santa Cruz, and Paul A. Heady, Jr., Mount Herman, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Aug. 20, 1971, Ser. No. 173,508

Int. Cl. F02k *9/02*

U.S. Cl. 60—39.74 A **10 Claims**



An open loop on-demand generator system with a two-position injector to provide a variable gas flow for a reaction control system. The injector system includes two two-position injectors located on opposite sides of the gas generator to provide a constant pressure to match the flow demand for each thrust step. Each injector includes a swirl device to provide swirled fuel at idle flow as well as maximum demand flow. Each injector also provides four intermediate thrust steps between idle flow and maximum demand flow.

3,736,750

POWER PLANT

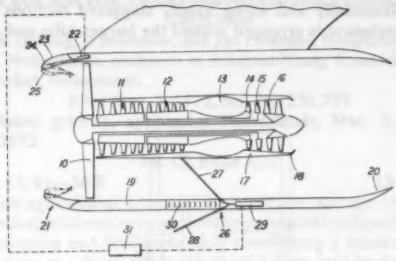
Jack Britt, Ambergate, Derbyshire, England, assignor to Rolls Royce Limited, Derby, England

Filed Mar. 12, 1971, Ser. No. 123,753

Int. Cl. F02k *3/02*

U.S. Cl. 60—226 A **5 Claims**

A power plant for an aircraft comprises a gas turbine engine which in at least one mode of operation is run at maximum continuous speed, variations in overall thrust being effected by the use of a thrust reversal device. A variable area intake is



provided, and because of the high mass flow in this mode, need not produce a very large reduction in the throat to achieve intake silencing.

3,736,751

GAP CONTROL APPARATUS

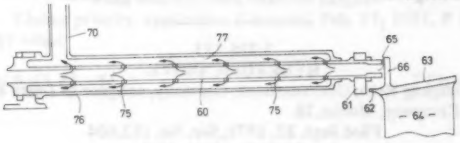
John Rodney Dyson Fuller, Downend, England, assignor to Secretary of State of Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 26, 1971, Ser. No. 147,265

Claims priority, application Great Britain, May 30, 1970, 26,186/70

Int. Cl. F02c *7/28*; F16j *15/40*

U.S. Cl. 60—262 **12 Claims**



In order to maintain a substantially constant clearance between static and rotating sealing elements of a gas turbine engine, one of the elements is connected to a thermally expansible control tube which is fed with hot gas from the engine in direct proportion to the size of the sealing clearance e.g. by using fluid which has leaked through the seal. The control tube is additionally fed with cold air and vented to a low pressure via a restrictor.

When the seal clearance is set to the desired value the pressures of hot and cold fluid are such that there is no flow along the control tube. Enlargement of the clearance gives an increase in pressure to the hot fluid which flows along the tube heating the tube and the resulting expansion reduces the sealing clearance. Reduction in sealing clearance reduces the pressure of the hot fluid so that the colder fluid flows along the tube and the resulting contraction enlarges the sealing clearance.

3,736,752

COMBUSTION CHAMBERS

Jean Melchoir, Fontenay-aux-Roses, France, assignor to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale; Delegation Ministerielle pour l'Armement Direction Technique des Armements Terrestres and Ateliers de Construction d'Issy-les-Moulineaux, Caserne Sully, France

Filed June 28, 1971, Ser. No. 157,460

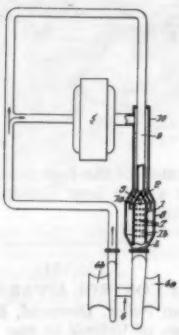
Claims priority, application France, July 7, 1970, 7025074

Int. Cl. F02c *7/08*

U.S. Cl. 60—13 **10 Claims**

The combustion chamber has a burner tube whose closed end has at least one fuel injector and whose open end emerges

into a pipe leading the gaseous mixture towards its position of use. The burner tube includes a number of orifices distributed circumferentially and along axially staggered sections. An outer enclosure is arranged around the burner tube and connected in sealed manner to the open end of the said burner tube. A first pipe, supplied with oxygen-rich gas, is connected in the neighborhood of the closed end of the burner tube. A second pipe supplied with oxygen-poor gas, is connected in the neighborhood of the open end of the burner tube.

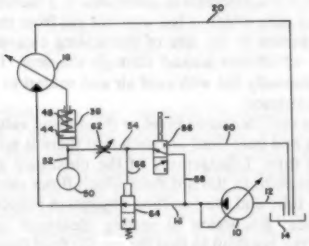


3,736,753

HYDRAULIC DRIVE

Wolfgang Roth, Oberauerbach, Germany, assignor to Deere & Company, Moline, Ill.

Filed Sept. 22, 1971, Ser. No. 182,604
Int. Cl. F15b *15/18, 15/24*
U.S. Cl. 60—489 **14 Claims**



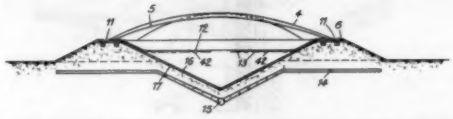
A hydraulic drive includes a hydraulic pump and a variable displacement axial piston type hydraulic motor. The swash plate of the motor is adjusted by a hydraulic cylinder having an accumulator connected to the pressurized end of the cylinder so that the motor displacement is at a maximum value when the pressure in the accumulator and the cylinder is below a predetermined value and decreases as the pressure in the accumulator builds up. A pilot-operated valve controls the flow of pressurized fluid from the pump to the motor, the pressure to open the pilot valve being supplied through a manually shiftable valve which also directs fluid pressure to the accumulator through an orifice, which retards the pressure buildup in the accumulator to gradually decrease the motor displacement after the control valves are shifted to their open positions.

3,736,754

RESERVOIRS FOR THE STORAGE OF LIQUIDS ESPECIALLY VOLATILE LIQUIDS

Jean P. Azalbert, Ablon-sur-Seine; Adrien Giraud, Paris, and Roger Andre Marquaire, Vaucresson, all of France, assignors to Compagnie Francaise Des Petroles, Paris, France

Filed Apr. 14, 1971, Ser. No. 133,931
Claims priority, application France, Apr. 14, 1970, 7013376
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **12 Claims**



This invention pertains to a reservoir with a very large capacity, in excess of 200,000 tons, for the storage of petroleum products.

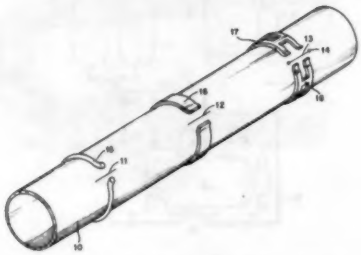
A cavity, natural or artificial, is covered with a sheet **16** consisting of waterproof material that is also impermeable to petroleum products. A sheet **12**, essentially gasproof, supported by floats **13**, covers the surface of the liquid. The edges of sheets **12** and **16** are anchored in the concrete ring **6** which is poured above the talus. The upper portion of the roof **4** is also connected to ring **6**. The roof is inflated by fans which blow air between the envelope **4** and the sheet **12**. Cable **5** reinforces the roof, a ditch **11** moves the runoff waters along. A central collector **15** catches the infiltration water.

3,736,755

IRRIGATION SYSTEM

Roland P. Hammond, 879 W. Outer Drive, and John W. Michel, 104 Caldwell Drive, both of Oak Ridge, Tenn.

Filed Feb. 23, 1972, Ser. No. 228,676
Int. Cl. E02b *13/00*
U.S. Cl. 61—12 **4 Claims**



The invention relates to a distribution system for subsurface or trickle irrigation of arid land using plastic pipe with spaced wall slits therein. Spring clips encircle the pipe at each slit to define pressure-initiated opening of each slit and the subsequent closure thereof. The pressure of the system may be increased to bring about opening of the slits with the resultant exit of water from each slit. More uniform water distribution results from use of this system and longer runs of piping may be used. Also, occasional application of higher pressure minimizes blockage of the slits by foreign particles.

3,736,756

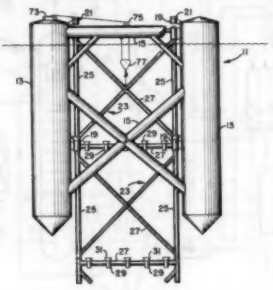
METHOD AND APPARATUS FOR ASSEMBLING AN OFFSHORE STRUCTURE

James R. Lloyd, Houston, Tex., assignor to Esso Production Research Co., Houston, Tex.

Filed Nov. 3, 1971, Ser. No. 195,087
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **9 Claims**

Method and apparatus are disclosed for constructing a buoyantly supported tower at an offshore worksite. Apparatus

is disclosed for assembling an elongated tower at an offshore location by connecting a number of tower segments in end-to-end relationship. The apparatus includes a rigid buoyant structure provided with a central vertical well. The buoyant structure is provided with means for locking a tower segment in a preselected position within the well to permit connection of its upper end to an additional tower segment, and for releasing the locked segment to permit the newly connected tower segment to be lowered within the well and locked in place for the



connection of an additional tower segment thereto. The method includes the step of positioning a tower segment at a preselected position within the well, aligned with the locked segment and rigidly connected thereto. The locked segment is then released and the rigidly connected segments are lowered and locked into place to permit the joining of additional tower segments. Additional segments are joined to the assembled section and lowered toward bottom until the tower extends to bottom. The buoyant assembly may then be elevated relative to the tower and rigidly affixed to the upper end.

3,736,757

CAST-IN-SITU CONCRETE PILES

Carl D. Hartzell, Oakland, N.J., and Thomas P. Schwarzer, Miramar, Fla., assignors to Raymond International, Inc., New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,089

Int. Cl. E02d *5/38*

U.S. Cl. 61—53.64 **3 Claims**

This invention relates to cast-in-situ concrete piles and methods of forming same wherein a shell section is positioned in the ground about the upper portion of a substantially rigid casing so that when the casing is withdrawn from the ground the void formed thereby is filled with concrete from the shell section, thereby preventing dirt and foreign substances from sluffing into the hole.

3,736,758

PROCESS FOR TREATING NON-AGRICULTURAL GROUNDS

Thale Dolfing, Winschoten, and Jan Lolkema, Hoogezand, both of Netherlands, assignors to Scholten-Honig Research N.V., Foxhol, Netherlands

Filed Mar. 3, 1972, Ser. No. 231,727

Claims priority, application Netherlands, Mar. 5, 1971, 7102972

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 R **13 Claims**

Non-agricultural grounds, in particular storage sites for chemical products, are rendered impermeable to liquids by incorporating and homogeneously distributing a binder in the soil down to a depth of at least about 2.5 cm, said binder being selected from the group consisting of organic and inorganic, natural and synthetic binders, and being used in a proportion ranging from about 0.75 to about 15% by weight, calculated on the soil treated and after having moistened the soil, compacting the soil thus treated in still moist condition to form a homogeneous, compact mass, and coating the surface of the thus compacted upper layer of the soil with a thin layer, to be formed in situ, of a water-insoluble polymer selected from the group consisting of polyurethanes, polyesters, polyepoxy resins and polyvinyl compounds.

3,736,759

PILE COVERING

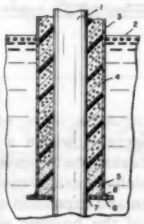
Werner Blose, 2000 Hamburg 20, Germany, assignor to Schlegel Manufacturing Company, Rochester, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,217

Claims priority, application Germany, Feb. 17, 1971, P 21 07 446.4

Int. Cl. E02d *5/60*

U.S. Cl. 61—54 **7 Claims**



The invention applies to sheaths for protecting underwater bodies such as piles by surrounding the body with the lower end of the sheath secured to the body and the space between the sheath and the body filled with a yieldable filler material. The improvement is that the filler material is an expandible, synthetic material expanded in place between the shell and the body to form a closed-cell foam having a snug, sealing bond with the surface of the body.

3,736,760

LATERALLY-STABILIZED STINGER SUSPENSION SYSTEM

Daniel K. Carstens, and Beverly C. D. Edwards, Jr., both of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.

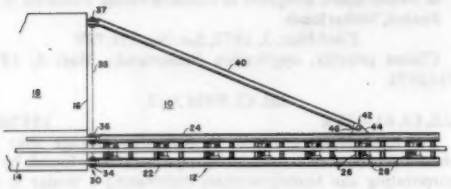
Filed Oct. 7, 1971, Ser. No. 187,363

Int. Cl. B63b *35/04*

U.S. Cl. 61—72.1 **5 Claims**

A laterally-stabilized stinger suspension system is provided to reduce the bending moments exerted on conventional st-

inger hitches. The suspension system includes at least one diagonal strut articulately connected between the stinger and



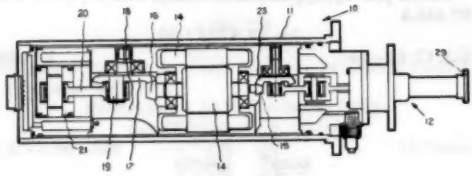
a point on the stern of the pipelaying vessel removed from the pipe ramp.

3,736,761

CRYOGENIC REFRIGERATOR

Thomas C. Richmond, Cumberland, and Peter K. Bertsch, Esmond, both of R.I., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,316
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **11 Claims**



A Stirling-cycle refrigerator within a straight cylindrical housing, with a drive means inbetween aligned compression and displacer pistons which are axially movable to define variable-volume compression and expansion spaces, heat exchangers at opposite ends of the housing adjacent the pistons respectively, a regenerator carried by the displacer, and a gas duct interconnecting the variable-volume spaces.

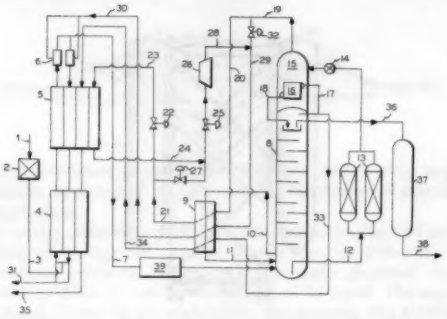
3,736,762

METHOD OF PRODUCING THE GASEOUS AND LIQUEFIED NITROGEN AND AN APPARATUS USED THEREFOR

Akira Toyama, Suma-ku, Kobe-shi, Hyogo-ken; Itsuro Matsumoto, Tarumi-ku, Kobe-shi, Hyogo-ken, and Tetsuo Izumichi, Takarazuka-shi, Hyogo-ken, all of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Hyogo-ken, Japan

Filed Oct. 20, 1970, Ser. No. 82,394
Claims priority, application Japan, Oct. 20, 1969, 44/83730
Int. Cl. F25j *3/02, 3/04*
U.S. Cl. 62—13 **4 Claims**

In a method of producing gaseous and liquefied nitrogen having a pressure higher than atmospheric pressure, by the use of an apparatus comprising a reversible heat exchanger and a single column rectifier, the combination of following steps: the impure gas obtained by heat-exchanging, in a condenser-evaporator, of liquefied air with nitrogen gas, each of which has been separated in the column, is divided into two parts; one of these parts is again divided into two parts; one part of this second division is passed through a control valve and then through the heat exchanger, after which it is united and admixed with the remaining part of the gas resulting from the second division, which has passed through a control valve; this admixture is supplied to an expansion turbine; the expanded



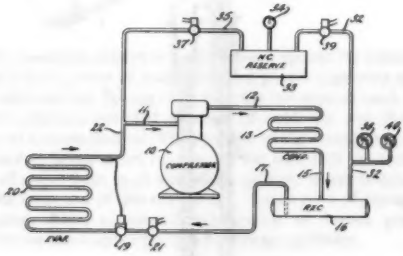
impure gas is united and admixed with the remaining part of the gas resulting from the original division, which has passed through a control valve: and this admixture, after having been passed through the air-liquefier and then the heat exchanger, is taken out of the apparatus. Adopting the abovementioned process makes it possible to industrially and advantageously produce gaseous nitrogen and liquefied nitrogen.

3,736,763

CONDENSER PRESSURE CONTROL APPARATUS

Milton W. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed Sept. 3, 1971, Ser. No. 177,548
Int. Cl. F25b *41/00*
U.S. Cl. 62—85 **6 Claims**

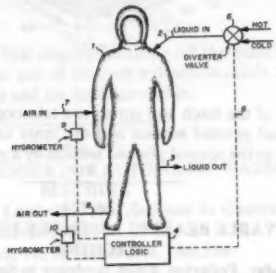


Non-condensable gas in a storage chamber is introduced into a refrigeration system to maintain condenser pressure above a desired minimum, and is permitted to escape from the refrigeration system back to the storage chamber to relieve high condenser pressures. Pressure responsive switches monitor the high side of the refrigeration system and control the flow of the non-condensable gas into and out of the refrigeration system.

3,736,764
TEMPERATURE CONTROLLER FOR A FLUID COOLED GARMENT

Alan B. Chambers, Los Altos; James R. Blackaby, Palo Alto, and John Billingham, Portola Valley, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,481
Int. Cl. F25d *17/06*
U.S. Cl. 62—89 8 Claims

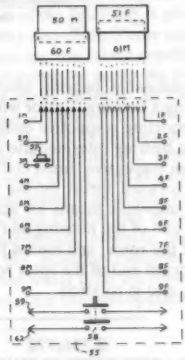


The inlet coolant temperature to a liquid cooled garment, as worn underneath an air ventilated space suit, is controlled as a function of the wearer's evaporative water loss rate (sweat rate) to provide comfort for the wearer over a wide range of work load rates.

3,736,765
APPLIANCE INCLUDING ELECTRIC DIAGNOSIS MEANS

George B. O'Dell, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 5, 1972, Ser. No. 215,575
Int. Cl. F25b *49/00*
U.S. Cl. 62—127 3 Claims

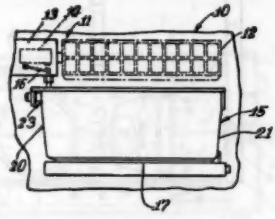


A household appliance including a plurality of electrical components is provided with readily accessible multiple circuit connector means for quickly checking and diagnosing the quality and operation of the individual components by means of test equipment adapted to be connected to the appliance through the connector means.

3,736,766
ADJUSTABLE WEIGHT CONTROL FOR A DOMESTIC ICE MAKER

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 9, 1970, Ser. No. 79,398
Int. Cl. F25c *5/18*
U.S. Cl. 62—137 5 Claims

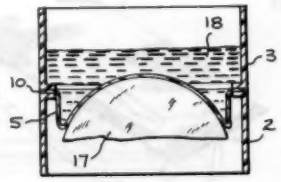


Means for controlling the amount of ice bodies collected in a storage bin. The bin is yieldably supported to move downwardly as a function of the weight of the ice bodies collected therein. An adjustable means is mounted on the collecting bin for adjustable actuation of a shut-off control mechanism for controlling the means for transferring ice bodies to the collecting bin so as to prevent further transfer of ice bodies to the collecting bin when the level of ice bodies in the collecting bin reaches a preselected level.

3,736,767
AUTOMATIC ICEMAKER INCLUDING REVERSIBLE MOLD CAVITIES

Robert M. Lukes, Beechwood Village, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 6, 1972, Ser. No. 231,901
Int. Cl. F25c *1/10*
U.S. Cl. 62—349 1 Claim



An icemaker comprising a rotatable member including oppositely facing receptacles having a common wall formed in part by a flexible and reversible wall portion defining a mold cavity in which a charge of water is frozen to form an ice piece. When the mold member is inverted and a charge of water introduced into the then upwardly facing receptacle, a previously formed ice piece is heat released from the mold cavity and the added charge of water causes the flexible wall portion to turn inside out to form a mold cavity for receiving the charge.

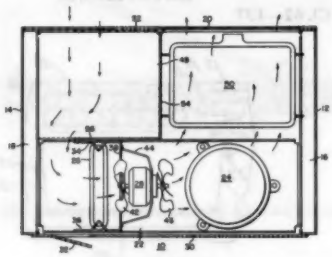
3,736,768
MACHINE COMPARTMENT ARRANGEMENT FOR A REFRIGERATING DEVICE

Philip F. Harbour, and Charles A. Wilcox, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 29, 1971, Ser. No. 157,897
Int. Cl. F25d *19/00*
U.S. Cl. 62—455 5 Claims

For a domestic refrigerator or freezer, a machine compartment arrangement to improve cooling of the compressor and

condenser therein by providing double, serially-arranged fans, the upstream one being arranged to draw air through the condenser, and the downstream one being arranged to direct air directly against the compressor. The arrangement is also intended to maintain a cooling air flow against the compressor as dirt builds up on the upstream face of the condenser by



providing a bypass around the condenser in the plenum in which the condenser is located. Additionally, the inlet air duct to the machine compartment has its inlet spaced above the floor, and a clean-out door giving access to the upstream face of the condenser is provided in the back wall of the machine compartment.

3,736,769

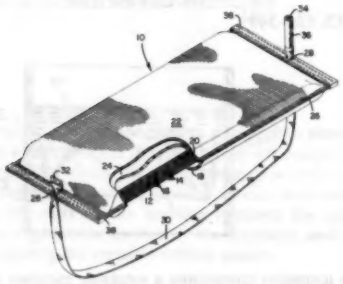
COOLING DEVICE

Donald Edwin Petersen, Pleasantville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 1, 1971, Ser. No. 158,828

Int. Cl. F25d *3/08*

U.S. Cl. 62—530 **3 Claims**



A cooling device is provided having a core of a cold storing material sandwiched between two thin, flexible walls having different heat transfer rates such that one side of the cooling device is colder to the touch than the opposite side of the device.

3,736,770

ADJUSTABLE RING HAVING BRIDGE ELEMENT AND FIRMLY SECURED NOTCHED LATCH BAR

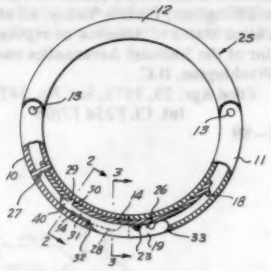
Joseph Kelrick, 4 Hawthorn Lane, Lawrence, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,218

Int. Cl. A44c *9/02*

U.S. Cl. 63—15.7 **8 Claims**

An adjustable finger ring having two tubular pivoted sections, one having a slot with a transverse catch pin and the second pivoted section having an arcuate spring slidably engaged in the first pivoted section and an arcuate notched latch receivable in the slot and lockingly engageable with the transverse catch pin. The inner end of the latch has a tooth engaged in an aperture in the spring, and the spring is channelled to receive the inner end of the latch. The interengaged inner end



portions of the latch and spring are telescopically received in the second pivoted section and the inner end of the spring is fastened to the second pivoted section by a pin.

3,736,771

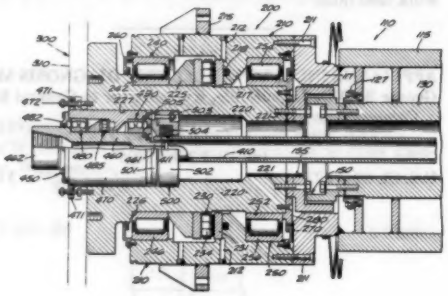
REMOVABLE BEARING ASSEMBLY FOR TUNNELING MACHINE

Frank Safar, Fullerton, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 863,783, Oct. 6, 1969. This application Aug. 30, 1971, Ser. No. 175,824

Int. Cl. F16d *3/06*; F16c *19/14*

U.S. Cl. 64—23.5 **6 Claims**



An easily replaceable bearing assembly for a tunneling machine including a housing, a rotor within the housing, radial bearings for supporting respective ends of the rotor from the housing, a thrust bearing intermediate the radial bearings and disposed between respective thrust collars on the housing and rotor so that a forward thrust on the housing can drive the rotor forward, removable means for applying a forward drive to the rearward end of the housing and a rotating drive to the rearward end of the rotor, and means for attaching a rotating cutter to the forward end of the rotor so as to be concurrently driven forwardly and in rotation.

3,736,772

LID LATCH OFF-BALANCE SWITCH

Colin J. Baker, Orange, New South Wales, Australia, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

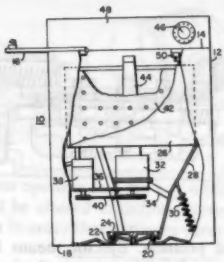
Filed May 11, 1971, Ser. No. 142,305

Int. Cl. D06f *33/02*, *37/24*, *37/42*

U.S. Cl. 68—12 R **7 Claims**

The invention provides an unbalance switch for a centrifugal extraction washing machine which deenergizes the machine when sufficient unbalance occurs to cause undesira-

ble gyrations. The switch is associated with a lid latch which prevents the user from merely opening the machine to redis-



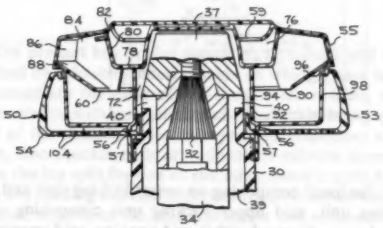
tribute the load and first requires shutting off the main switch and moving the timer out of the spin extraction mode before the lid can be opened and the load accessible.

3,736,773

ADDITIVE DISPENSER FOR AUTOMATIC WASHING MACHINE

Richard A. Waugh, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 12, 1971, Ser. No. 188,328
Int. Cl. D06f *39/02*
U.S. Cl. 68—17 A **5 Claims**



A dispenser for receiving additives such as a cleaning agent, an oxidizing agent and a fabric conditioner, diluting these additives where necessary and then dispensing them into the basket of an automatic washing machine at the proper time during an operating cycle of the machine. A plurality of chambers are located within the dispenser. These chambers include an inner chamber for storing the fabric conditioner during a wash cycle; a holding chamber for receiving the fabric conditioner ejected from the inner chamber by centrifugal force during a spin cycle; and a dilution chamber for receiving, dispensing and diluting the oxidizing agent, as well as for receiving, diluting, and dispensing the fabric conditioner which falls into this chamber at the start of a rinse cycle. In addition, a provision for receiving a detergent and dispensing it into the basket during a wash cycle is also included. Means are also provided for automatically cleaning the fabric conditioner residue from the holding chamber by forcefully propelling thereinto, rinse water from the dilution chamber so as to prepare the dispenser for the next operative cycle.

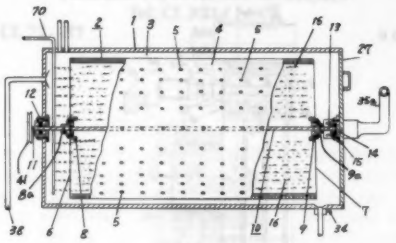
3,736,774

DRY CLEANING AND LAUNDRY APPARATUS

Masaji Shibata, 23, No. 30, Kamishima-cho, Kadoma, Japan

Filed Jan. 24, 1972, Ser. No. 220,343
Int. Cl. D06f *43/02*
U.S. Cl. 68—18 R **9 Claims**

Dry cleaning and laundry apparatus suitable for use on a mobile unit and having a rotatable drum inside a stationary tank. The drum has apertured side walls and open ends so that cleaning fluids supplied to the tank are distributed throughout the articles being cleaned inside the rotating drum. A plurality of semi-circular arrays of elongated brushes are mounted inside the drum, with the articles to be cleaned being placed between adjacent series of brushes. Each series of brushes is fixed to the drum for rotation therewith and each individual brush within the series is independently rotatable relative to the drum. One end of each series of brushes is movable



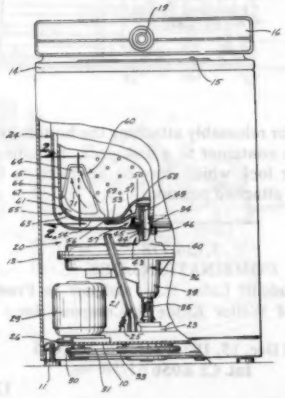
through a limited distance in the circumferential direction, so that the varying gravitational and centrifugal forces on the brushes, due to rotation of the drum, cause each brush series to reciprocate, thereby enhancing the cleaning action on the articles located between adjacent brush series. The brushes are also longitudinally movable relative to the drum so that they may be withdrawn from the drum through a door in the rear end of the stationary tank to facilitate placement of the articles to be cleaned between the brushes, and subsequent removal of the articles therefrom.

3,736,775

OSCILLATABLE TUB WITH FLEXIBLE BLADE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Mar. 9, 1972, Ser. No. 233,231
Int. Cl. D06f *23/04, 37/14*
U.S. Cl. 68—23 **10 Claims**

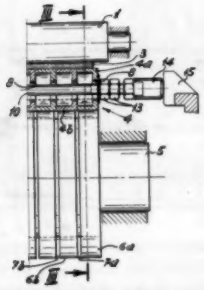


An oscillatable tub for a washing machine includes at least one flexible blade attached to and oscillatable with the tub for effecting a washing action. The flexibility of the blade enhances the movement of the washing fluid and articles contained therein.

3,736,776
SKIN SPLITTING MACHINE

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & Co., Modena, Italy

Filed Apr. 12, 1971, Ser. No. 133,034
Claims priority, application Italy, Apr. 14, 1970, 23281 A/70
Int. Cl. C14b *1/14*
U.S. Cl. 69—13 8 Claims

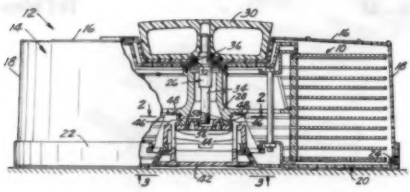


A skin splitting machine having a knife, and a conveyor for carrying the skin to the knife and means for pressing the skin to the conveyor. The pressing means comprises a series of axially aligned resilient discs and a non-resilient roller interposed between each disc and the conveyor. Each disc and roller cooperating independently to press the skin to the conveyor.

3,736,777
LOCKING ATTACHING MECHANISM FOR DISK-PACK STORAGE CONTAINER

Wayne M. Wirth, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1971, Ser. No. 194,150
Int. Cl. E05b *65/52*
U.S. Cl. 70—63 5 Claims



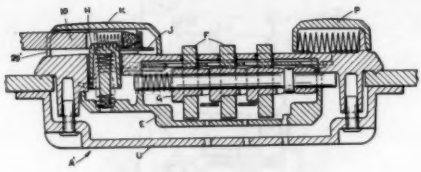
A mechanism for releasably attaching the bottom cover of a disk-pack storage container to a disk pack, including a key-operated cylinder lock which may be operated to lock the mechanism in the attached position.

3,736,778
COMBINATION LOCK

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Co., Division of Walter Kidde & Company Inc., Clifton, N.J.

Filed Dec. 15, 1971, Ser. No. 208,086
Int. Cl. E05b *65/50*
U.S. Cl. 70—70 12 Claims

A combination lock of the multiple dial type employs a resiliently mounted plunger cooperable with a hasp to releasably connect the hasp to the combination lock. The lock includes a slide member mounted for movement to respective latched and unlatched positions, and means are provided permitting the slide member to move to unlatched position only when the dials are on predetermined open combination. The slide member and the plunger are provided with cooperable means to retract the plunger upon movement of the slide

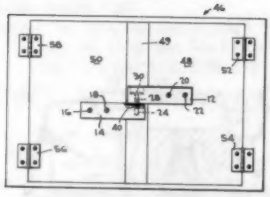


member to unlatched position. Ejector means located adjacent the plunger acts to forcibly separate the hasp from the combination lock upon retraction of the plunger.

3,736,779
LOCK

Eugene L. Pratt, 717 A Wolcott Drive, Philadelphia, Pa.

Filed Apr. 26, 1971, Ser. No. 137,176
Int. Cl. E05b *47/00*
U.S. Cl. 70—276 11 Claims



A lock is disclosed comprising an upper locking unit and a lower locking unit, said upper locking unit comprising an opening, a plunger disposed within said opening, said opening being so dimensioned as to permit said plunger to be slidably displaced within said opening, said plunger being of such a material that said plunger is caused to be slidably displaced within said opening by a magnetic force being placed in close proximity thereto, said lower locking unit comprising an opening so dimensioned as to receive said plunger, means retaining the upper portion of said plunger in said upper locking unit when the lower portion of said plunger is disposed in said opening of said lower locking unit whereby said upper locking unit is locked to said lower locking unit when said plunger is disposed within said openings in said upper and lower locking units and whereby said upper locking unit is unlocked from said lower locking unit when a magnetic force is brought into close proximity with said plunger causing said lower portion of said plunger to be removed from within said opening in said lower locking unit.

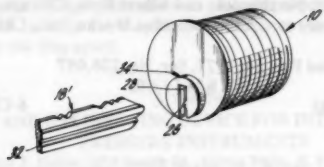
3,736,780
DEVICE FOR ALTERING LOCK CYLINDER TO RECEIVE A NEW KEY

M. Leonard Singer, 60 Brandon Avenue, Wayne, N.J.

Filed Apr. 28, 1971, Ser. No. 138,207
Int. Cl. E05b *15/08*
U.S. Cl. 70—453 4 Claims

A device for altering a lock cylinder to receive a new key comprises a plate which is adapted to be secured to the entrance opening of the lock cylinder and which is formed with one or more projections in order to define a new configuration of the key access opening in order to alter the lock so that it

must receive a new key. The entrance plate is formed with a projection which may be selectivey located in respect to the



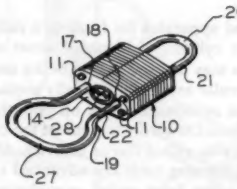
previous access opening and the key which previously fit into the lock must be altered to define a recess to accommodate the projection in order that it may be received in the lock.

3,736,781

ADJUSTABLE SHACKLE KEY HOLDER

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed July 22, 1971, Ser. No. 165,172
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **4 Claims**



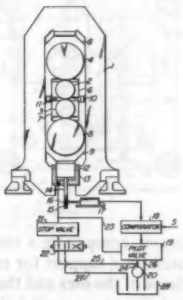
The present key holder simulates a padlock and is characterized by a double-ended shackle on which a case is mounted intermediate the ends of the shackle for relative reciprocal movements, with one side leg of the shackle being split. Each end of the shackle projects beyond its respective end of the case. The shackle ends are adjustable relative thereto to expose the leg split for one or the other shackle ends for respective key loading thereof. A certain reciprocal movement of the shackle relative to the case will locate and secure the leg split within the case to confine keys, of several classes if desired, on the shackle ends which were so loaded.

3,736,782

THRUSTING DEVICES FOR ROLLING MILLS

Nobuhiro Fujino, and Toshiyuki Kajiwara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,277
Claims priority, application Japan, Oct. 22, 1969, 44/83895
Int. Cl. B21b *37/08*
U.S. Cl. 72—8 **8 Claims**



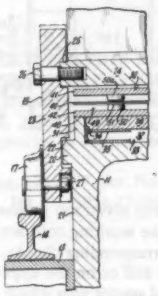
A thrusting device for rolling mills, comprising an electric resetting mechanism in which the position of rolls is fed back by directly electrically detecting a movement of a thrusting ram received in a hydraulic cylinder for adjusting an amount of stroke of rolls relative to each other.

3,736,783

FIXTURE FOR FORMING HEATING ELEMENTS BY HYDRAULIC PRESSURE

Ernest S. Fabri, Willingboro, N.J., assignor to Rosenblad Corporation, Princeton, N.J.

Filed Jan. 17, 1972, Ser. No. 218,429
Int. Cl. B21d *26/02*
U.S. Cl. 72—57 **9 Claims**



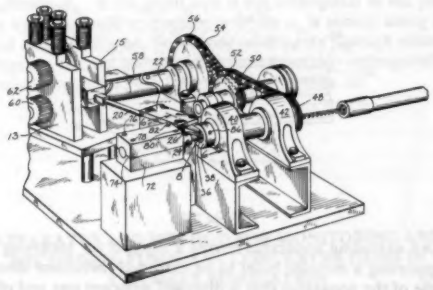
A fixture for forming heating elements of the dimpled plate type includes a flat piston plate carried on an inflatable bag for uniformly supporting an envelope made of metal sheets sealed together around their edges during inflation of the envelope. The envelope is positioned between two studded plates for restraining opposed portions of the sheets against separation as the envelope expands under internal hydraulic pressure. An upper portion of the fixture is mounted on a movable carriage so that the envelope can be placed in the fixture by loading from above.

3,736,784

ROLLER DIE COILER WITH FIXED HELICAL MANDREL

Paul J. Felker, Marshfield, Wis., assignor to Penetred Corporation, Marshfield, Wis.

Filed July 1, 1971, Ser. No. 158,700
Int. Cl. B21f *3/04*, *9/02*
U.S. Cl. 72—145 **10 Claims**

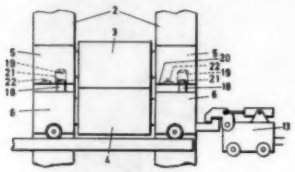


Coiled wire is formed by forcing linear wire around a helical groove in a fixed mandrel by means of a hollow, rotating die which surrounds a portion of the groove in the fixed mandrel, there being feed mechanism which forces wire into the helical groove. The rotating die and feed mechanism are driven in synchronism with each other from a common rotary power source.

3,736,785
ROLLING MILL

Hans Friedrich Marten, Kreuztal-Kredenbach, Germany, assignor to Siemag Siegener Maschinenbau, G.m.b.H., Germany

Filed May 7, 1971, Ser. No. 141,310
Claims priority, application Germany, May 8, 1970, P 20 22 385.2
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 1 Claim

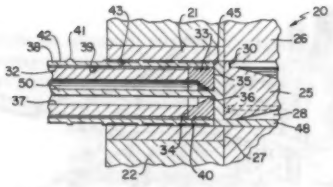


This disclosure of this invention relates to a roll stand of a rolling mill wherein the working rolls are lowered and raised together with their corresponding chocks, in which on the bottom side of the upper roll or on the upper side of the bottom roll there are mounted spacer pins which in the rolling operation pass into corresponding indentations on the opposite surfaces of the chocks of the other roll, but which during roll changing when the roll sets are lowered or raised engage supporting surfaces of the opposite surfaces of the chocks of the other rolls, subsequent to a relative displacement of both rolls in axial direction, to thereby maintain the rolls at a distance to each other during roll changing.

3,736,786
EXTRUDING APPARATUS AND METHOD

Nicholas A. Wagner, Chester, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 9, 1971, Ser. No. 161,170
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 20 Claims

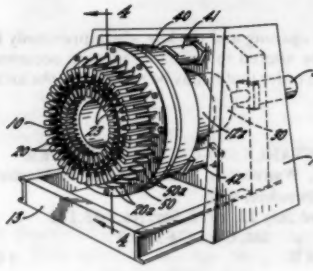


An extruding apparatus having a support for receiving and supporting a metallic billet to be extruded therefrom through a die of the apparatus that is disposed adjacent one end of the billet upon relative movement between the billet and a ram of the apparatus that is operatively associated with the billet. A shearing device is provided for removing the billet skin at the end of the billet that is to be extruded through the die while the billet is supported by the support to produce at least a scalped portion of the billet prior to the extrusion of that scalped portion of the billet through the die upon relative movement between the ram and the billet.

3,736,787
METHOD AND APPARATUS FOR FORMING CONVOLUTED METAL ANNULUS

Vernon R. Fencl, Northbrook, and Albert Roze, Chicago, both of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Feb. 14, 1972, Ser. No. 226,057
Int. Cl. B21d *13/02*
U.S. Cl. 72—385 6 Claims

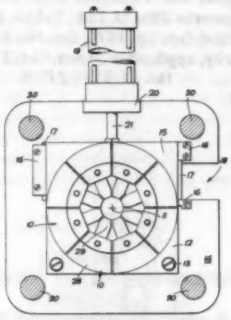


A method and apparatus for forming a radially convoluted annulus from a cylindrical blank of sheet metal. The convoluted annulus may be used in disc brake assemblies, for example. Two circular sets of individually pivoted forming tools initially grip the cylindrical blank on opposite sides thereof, and are then pivoted inwardly to convert the cylinder to an annulus which may be either flat or tapered. At the same time, the two sets of forming tools are advanced relatively toward each other so as to form radial convolutions in the metal blank. The pivotal movement of the two sets of forming tools is controlled by hydraulically actuated cams.

3,736,788
CRIMPING OR SWAGING APPARATUS

Michael William Olive-Jones, Maidenhead, and Douglas Raymond Randall, London, both of England, assignors to BTR Industries Limited, London, England

Filed Nov. 12, 1971, Ser. No. 198,392
Claims priority, application Great Britain, Dec. 3, 1970, 57,496/70
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 7 Claims



Apparatus for crimping comprising a ring of dies, each die independently mounted on a support for radial sliding movement. The outer surfaces of the dies and the bore of a member are shaped so that relative movement between the member and ring, when the dies are in contact with the bore, causes the dies to move radially inwardly to effect crimping. The dies are wedge-shaped when viewed along the axis of the ring and the

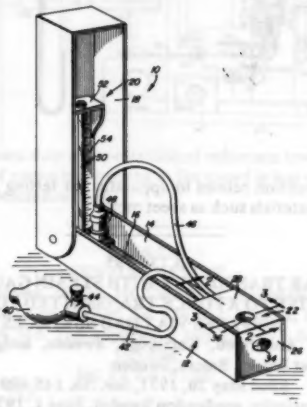
outer surfaces thereof may form a continuous surface when the dies are in the crimping position. The support may be in two parts relatively movable in a plane perpendicular to the ring axis, and means may be provided between adjacent dies to urge the dies apart.

3,736,789

TEST AND CALIBRATING DEVICE FOR INTRA-OCULAR PRESSURE INSTRUMENTS

Norman J. Drew, 229 South St., Glens Falls, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,389
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **9 Claims**



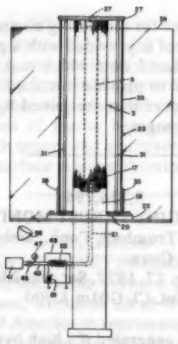
An eyeball simulating sphere enclosed within a block and exposed through an oval opening in at least one face of the block, is internally pressurized by a squeeze bulb to any desired pressure in order to test or calibrate tonometers or provide a practice model for digital palpation. The sphere is made of a flexible material and connected by tubing to the squeeze bulb and a pressure gauge.

3,736,790

APPARATUS FOR NON-DESTRUCTIVELY TESTING FUEL FILTERS

Anthony P. Pontello, 447 Thomson Avenue, Springfield, Pa.

Filed Aug. 26, 1971, Ser. No. 175,238
Int. Cl. G01m *3/38*
U.S. Cl. 73—37 **8 Claims**



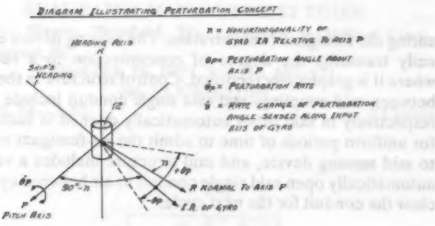
Subject invention relates to novel and improved apparatus for non-destructible detection of flaws in aircraft fuel filtering or coalescing elements. The improved apparatus provides for the conduction of heated pressurized air through the coalescer element to be tested into contact with a plastic film which is positioned about the outer peripheral surface of the coalescer element. The outer surface of the film is coated with a predetermined cholesteric liquid crystal material or a combination of the same. Flaws present in the coalescer element produce uneven conditions of the heated air flow through the coalescer and temperature gradients on the liquid crystal coated film. Resulting color patterns on the coated film identify the location and nature of flaws in the coalescer element.

3,736,791

GYRO AXIS PERTURBATION TECHNIQUE FOR CALIBRATING INERTIAL NAVIGATION SYSTEMS

Joseph R. Cantwell, Huntington; Samuel L. Fagin, New York, and Hyman Strell, Jericho, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 18, 1967, Ser. No. 662,274
Int. Cl. G01c *25/00*
U.S. Cl. 73—1 E **9 Claims**



A method whereby the misalignment of the east-seeking-gyro input axis of a ship's inertial navigator system (SINS) is measured relative to the pitch axis of its stable platform. The roll axis of the platform is nominally perpendicular to the pitch axis and is constrained to a fixed angle about the heading axis. The east-seeking-gyro input axis is oscillated (perturbed) about the platform pitch axis at a relatively high rate but samll amplitude, θ_p . If the input axis is not orthogonal to the pitch axis by an amount n, a rate $\dot{\gamma} = \dot{\theta}^p \sin n$ is sensed along the input axis of the gyro. Processing of this rate through suitable computer circuits provides the amount of non-orthogonality, or misalignment, n .

3,736,792

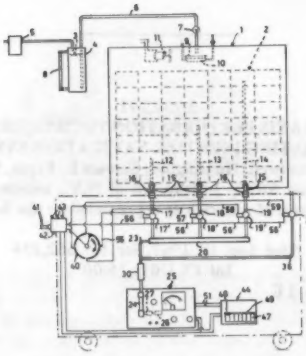
APPARATUS AND METHOD FOR MONITORING AND RECORDING FUMIGANT CONCENTRATIONS IN CHAMBER FUMIGATION

Stephen D. Poulsen, Kingsburg, Calif., assignor to Sun-Maid Raisin Growers, Kingsburg, Calif.

Filed July 16, 1971, Ser. No. 163,365
Int. Cl. G01n *31/00, 1/22*; A23l *1/00*
U.S. Cl. 73—27 R **7 Claims**

A system of monitoring the concentration of a gaseous fumigant within an enclosed chamber having the product or products to be fumigated, the monitoring being automatic in a predetermined order in different locations within said

chamber in successive cycles for a predetermined period of time in each cycle. The degree of concentration is automatically graphically recorded during each of the successive periods of time within each cycle. The fumigant is withdrawn from said different locations through separate tubes within said chamber releasably connectible outside the chamber for separate couplings with a corresponding number of tubes that in turn connect with a single conduit for delivering the withdrawn air-fumigant mixture to a sensing device for measuring the fumigant concentration. The sensing device electrically transmits the degree of concentration to a recorder where it is graphically recorded. Control structure in the tubes between said couplings and said single conduit include valves respectively in said tubes automatically opened in succession for uniform periods of time to admit the air-fumigant mixture to said sensing device, and said structure includes a valve to automatically open said single conduit to air between cycles to clear the conduit for the next cycle.



3,736,793

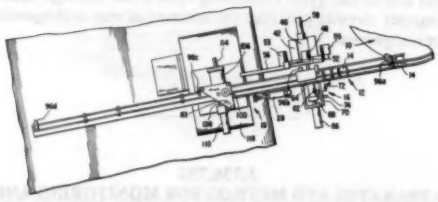
CARTRIDGE FLASH HOLE INSPECTION APPARATUS

George L. Christensen, Los Angeles, Calif., assignor to Martin Marietta Aluminum Inc., Torrance, Calif.

Filed Sept. 15, 1971, Ser. No. 180,789

Int. Cl. G01n *15/08*

U.S. Cl. 73—38 **5 Claims**



An apparatus for inspecting the number and capacity of vent or flash holes in a cartridge case having an optical tester to count the vent holes and pass a case upon detection of a minimum number of vent holes and an air flow tester for directing a measured flow of air through the vent holes of cartridge cases passed by the optical tester to detect the capacity thereof and pass the cartridge case upon detection of a capacity within predetermined limits.

3,736,794

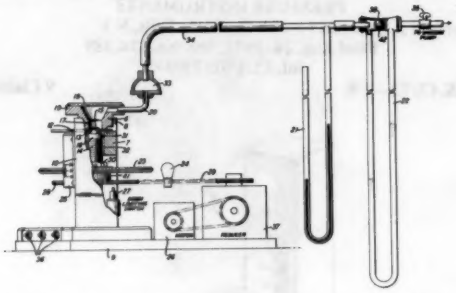
APPARATUS FOR TESTING DUCTILITY OF SHEETS

Frank J. Biondi, Brooklyn, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 2, 1946, Ser. No. 265,894

Int. Cl. G01n *3/26*

U.S. Cl. 73—102 **4 Claims**



This invention relates to apparatus for testing the ductility of sheet materials such as sheet metal.

3,736,795

TUBULAR TRANSDUCER WITH STRAIN GAUGES AND SENSITIVE TO A FORCE TRANSMITTED TO ITS END SURFACES VIA LOAD SURFACES

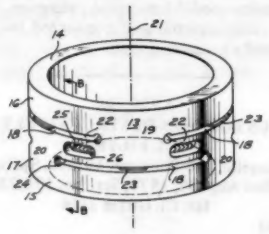
John-Erik Andersson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed May 20, 1971, Ser. No. 145,409

Claims priority, application Sweden, June 1, 1970, 7552/70

Int. Cl. G01l *1/22*

U.S. Cl. 73—141 A **9 Claims**



A tubular transducer for measuring compressive forces applied to the end thereof is provided with a plurality of axially and azimuthally displaced slots which make angles with the axis of the transducer to provide intermediate regions in the surface of the transducer that are joined by bridging regions which support strain gauges.

3,736,796

FAN ENGINE THRUST MONITOR

Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

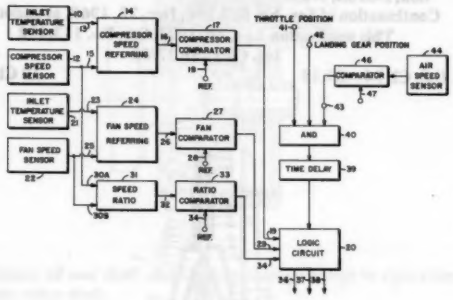
Filed Mar. 27, 1972, Ser. No. 238,243

Int. Cl. G01m *15/00*

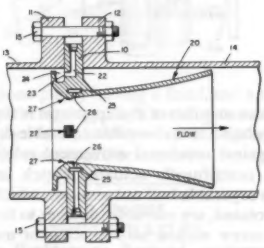
U.S. Cl. 73—178 T **5 Claims**

A warning signal is generated if a high bypass ratio fan-type gas turbine engine fails to develop adequate thrust for takeoff of an aircraft. Two engine operating parameters are derived, referred compressor speed and referred fan speed. After a takeoff is initiated, a warning signal is developed under any

one of three conditions: (1) if the referred compressor speed is less than a pre-established reference level; (2) if the referred fan speed is less than a pre-established reference level; and (3) if the ratio of compressor speed to fan speed is less than a pre-established reference level.



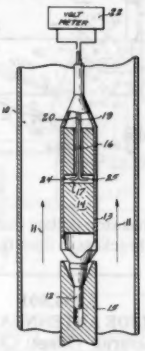
3,736,797
VENTURI DEVICE
William R. Brown, 341 W. Mt. Vernon St., Lansdale, Pa.
Continuation-in-part of Ser. No. 826,624, May 21, 1969, Pat. No. 3,636,765. This application July 23, 1971, Ser. No. 165,608
Int. Cl. G01f *1/00*
U.S. Cl. 73—213 **11 Claims**



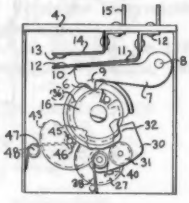
A compact, high differential, low loss, curvilinear Venturi utilizing a convergent section which is modified to provide a means for creating and constantly maintaining turbulent action of the boundary layer in the general locale of the point of greatest constriction, regardless of Reynolds Number, flow patterns and types of media being measured, a geometric throat of no length aspect and a recovery section tangential to or in continuous surface relation thereto.

3,736,798
PERMANENT MAGNET PROBE FLOWMETER
Myrick R. Wood, Richland; Bernard H. Duane, Pasco, and Delbert L. Lessor, Richland, all of Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed June 24, 1971, Ser. No. 174,384
Int. Cl. G01f *1/00*; G01p *5/08*
U.S. Cl. 73—194 EM **8 Claims**

A probe-type flowmeter for measuring the flow of conducting fluids, in particular liquid sodium, is described. The probe includes a permanent magnet for developing a magnetic flux and a pair of conductors coupled to a metering device for measuring the e.m.f. developed in the conducting fluid. The magnitude of the e.m.f. is a function of the fluid velocity.



3,736,799
DUAL RANGE MANUAL PRESET TIMER
John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.
Filed Oct. 26, 1971, Ser. No. 192,171
Int. Cl. G05g *21/00*
U.S. Cl. 74—3.52 **2 Claims**

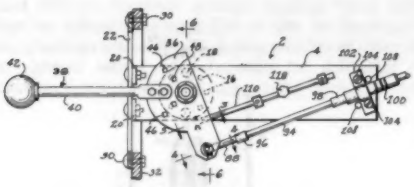


A dual range manual preset timer drives through the first part of its timing range at relatively high speed to give short timings of relatively high accuracy. It drives through the second part of its timing range to low speed to give long timings where high accuracy is not required. The low speed timing gears are always in mesh to insure against hang up. The high speed gear engages at the change over point in the timing range and drives from this point to the off position. A one way drive on the low speed timing gears permits the faster rotation by the high speed gears.

3,736,800
CONTROL UNIT
Ted W. Gregory, Mundelein, Ill., assignor to Arens Controls, Inc., Evanston, Ill.
Filed Feb. 12, 1971, Ser. No. 114,815
Int. Cl. 74 *526*; G05g *1/00*
U.S. Cl. 74—491 **9 Claims**

A lever operated control unit includes two brackets of metal stampings which are adjustably connected together. A lever crank, which is also a metal stamping, is rotatable on a pivot bolt secured to the brackets, and a lever is adjustably mounted

on the lever crank. The lever crank is adapted to operate a control member such as a push-pull cable. A rod is pivoted to



the lever crank and has stop collars that cooperate with a pivot fitting on one of the brackets to limit the travel of the cable.

3,736,801

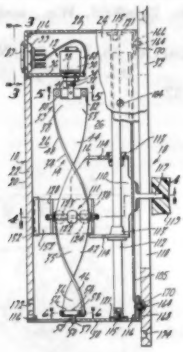
SLIDE ANTENNUATOR

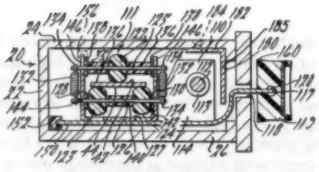
Robert A. Bloom, Lathrup Village; Charles R. Sturtz, Romulus, and Timothy P. McGrath, Detroit, all of Mich., assignors to Audio Designs and Manufacturing, Inc., Roseville, Mich.

Filed Sept. 22, 1971, Ser. No. 182,660

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **10 Claims**





Apparatus for effecting a smooth, quiet, and reversible operation without backlash of the rotatable control member of an electrical device which member is rotatable to vary the electrical output characteristic of such device. A substantially rigid rotatable cam of the form of a helically twisted ribbon presenting opposed surface portions extending helically lengthwise of the axis of rotation of the cam, a resilient coupling between the cam and control member, cam drive means comprising a roller carriage slideable with low friction along a linear path determined by a fixed slide rod and roller means carried by the carriage spring biased into resilient contact with said opposed surface portions of the cam.

3,736,802

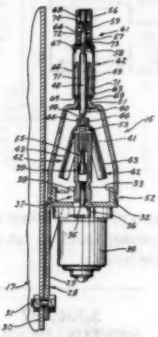
APPARATUS FOR OBTAINING A CONTROLLED RECTILINEAR MOVEMENT OF A ROTATABLY DRIVEN ACTUATOR MEMBER

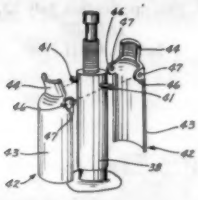
Willis L. Kibler, Detroit, Mich., assignor to McCord Corporation, Detroit, Mich.

Continuation of Ser. No. 887,168, Dec. 22, 1969, abandoned. This application Apr. 20, 1971, Ser. No. 113,222

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **10 Claims**





The actuator member of the apparatus is supported for axial movement relative to a reversible rotatable drive member and is locked against rotational movement relative to the drive member. A centrifugally actuated clutch unit on the drive member has separable half nut sections, which when the drive member is rotated, are movable together to form a split nut for engaging a screw section on the actuator member. On axial movement of the actuator member in either direction the split nut overruns the screw section, but is yieldably held in an abutting relation with the screw section for threaded engagement therewith on a reversed rotation of the drive member. When the drive member is stationary and the split nut disengaged from the screw section, the actuator member is yieldably supported for manual movement axially of the drive member through a predetermined distance to maintain at least one end of the screw section in a position to engage the split nut on rotation of the drive member.

3,736,803

VARIABLE SPEED TRANSMISSION MECHANISM

Alexandre Horowitz, Einhoven; Bernard Joseph Beusink, Oerle, and Martinus Hubertus Cuypers, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,045

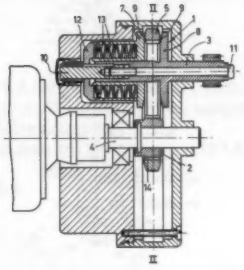
Claims priority, application Netherlands, Mar. 26, 1970, 7004605

Int. Cl. F16h *15/42, 37/00, 37/06*

U.S. Cl. 74—192 **8 Claims**

A variable-speed transmission for use between two substan-

tially parallel shafts for permitting continuous drive engagement during continuous speed-variation, and during power-

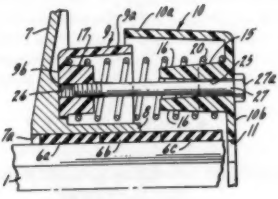


variation of one shaft and corresponding change in operation of the other shaft.

3,736,804
PULLEY ASSEMBLY

Raymond W. Giegerich, South Haven, Mich., assignor to Lovejoy, Inc., River Forest, Ill.

Filed Mar. 26, 1971, Ser. No. 128,245
Int. Cl. F16h *9/18*
U.S. Cl. 74—230.17 C **6 Claims**

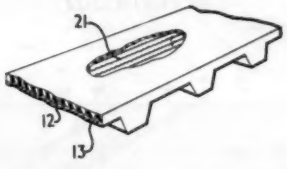


A variable speed pulley having a fixed and a movable disk, the movable disk being urged by a cartridge assembly of spring covers urged apart by a plurality of spaced springs and means for drawing said covers together.

3,736,805
TOOTHED BELTS

Michael Dent, Healdgreen, England, assignor to Dunlop Holdings Limited, London, England

Filed Apr. 27, 1971, Ser. No. 137,889
Claims priority, application Great Britain, May 2, 1970, 21,194/70
Int. Cl. F16g *1/22, 1/28*
U.S. Cl. 74—237 **20 Claims**

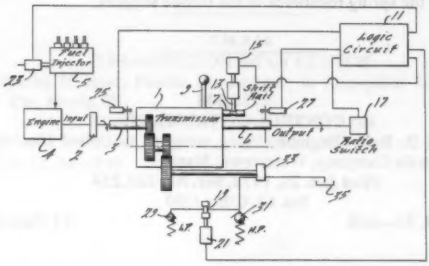


A toothed belt comprising a continuous strip of elastomeric material having embedded therein at least one wire reinforcing cord comprising at least one bunch of fine gauge metal filaments, of which the following is a specification.

3,736,806
MOTOR VEHICLE TRANSMISSION

Eric John Banks, Thorpe Bay, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1971, Ser. No. 176,084
Int. Cl. F16h *5/46*
U.S. Cl. 74—336 **7 Claims**

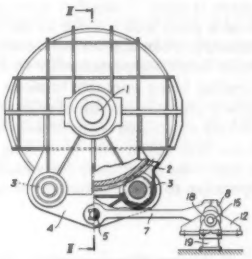


A multiple ratio power transmission for trucks having synchronized ratio changes comprising a driver-operated gear shift linkage mechanism for shifting torque delivery clutch elements into and out of engagement, separate speed sensors for determining the speed of the torque input member and the speed of the torque output member for the transmission mechanism and an electronic logic circuit sensitive to the output signals of each speed sensor for conditioning the transmission mechanism for ratio changes when the speeds of the torque delivery elements are in synchronism and for controlling the relative speeds of the torque input member and the torque output member to effect synchronism during ratio changes.

3,736,807
TILTING DRIVE FOR CONVERTERS

Gunther Reitter, Linz, and Ernst Riegler, Enns, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz

Filed Mar. 26, 1971, Ser. No. 128,414
Claims priority, application Austria, June 10, 1970, A 5208/70
Int. Cl. F16h *57/00*
U.S. Cl. 74—410 **8 Claims**



The invention relates to a tilting drive for converters comprising a gear wheel fixed to a converter tilting trunnion and a pinion carrier suspended on said tilting trunnion to swing in pendulum fashion and supporting at least one driving pinion, said pinion carrier being resiliently supported in relation to a foundation by a torque support comprising a linkage rod, a lever producing a torsional moment and a torsional rod, wherein the improvement resides in at least one of the following features, i.e.

a. that for fixing said torsional rod a bearing block is provided which is axially displaceable relative to the torsional rod so that the effective length of the torsional rod may be changed; and

b. that the effective lever length of the lever producing the torsional moment is adjustable. This torque support is provided with great elasticity towards shocks. It is possible to change the spring constant and/or the spring damping so that the torque moment may correctly and optimally be adjusted to the operational conditions. The wobble movements of the converter do not cause changes of the spring resistance of the torque support.

3,736,808

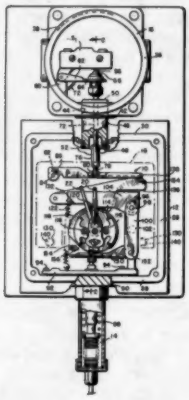
CONTROL INSTRUMENT

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Jan. 24, 1972, Ser. No. 220,224

Int. Cl. G05g *1/00*

U.S. Cl. 74—469 **11 Claims**



In a control instrument, a switch embodying an actuating element, an arm arranged to effect actuation of the actuating element, said arm having an arcuate portion against which the actuating element is held, a support mounting the arm for movement about a pivot axis located at the center of curvature of said arcuate portion and for movement relative to said pivot axis, a transmitter supported with an end adjacent the arm, said transmitter being operable to move the arm relative to said pivot axis to effect actuation of said actuating element, and a cam operably associated with the arm adapted to effect movement of the arm about said pivot axis relative to said transmitter to select the conditions for which the transmitter will become operative to effect actuation of said actuator element.

3,736,809

SELECTABLE PRICE-VOLUME DISPENSING APPARATUS

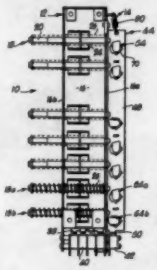
Kenneth G. Crabaugh, and Arthur R. Templeman, both of Kansas City, Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Mar. 23, 1972, Ser. No. 237,457

Int. Cl. G05g *1/00*

U.S. Cl. 74—483 PB **7 Claims**

An auxiliary selection control assembly may be preset to modify the operation of the main selection control assembly of a vending or dispensing machine, such modification causing, for example, an extra amount of beverage to be dispensed over and above that provided by the same selection when the latter is in an unmodified condition. Each selection may be set



for a modified or a normal dispensing operation independently of all other selections such that individual price and volume combinations may be established.

3,736,810

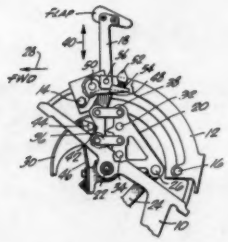
SLAT RETRACT GATE

Carlos P. Fernandez, Westminister, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 6, 1971, Ser. No. 159,722

Int. Cl. G05g *5/02*

U.S. Cl. 74—491 **4 Claims**



A gate mechanism utilized in conjunction with various cams, followers and linkages to prevent inadvertent retraction of aircraft wing slats during flap retraction. A downward movement of the control lever is required before rotationally retracting the lever to the end of the quadrant for retracting both slats and flaps. Gate closure prevents the lever returning the same way to the slat extension position.

3,736,811

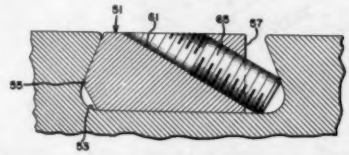
BALANCE WEIGHT ATTACHMENT FOR TURBINE WHEELS

Richard A. Neary, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,101

Int. Cl. F16f *15/32*

U.S. Cl. 74—573 **3 Claims**



A balance weight attachment for use in the balance groove of a turbine wheel wherein the necessity of an access slot for

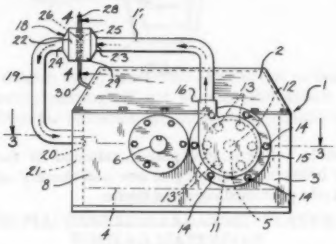
inserting the balance weight attachment is obviated. The balance weight attachment is formed so that it may be inserted anywhere along the balance groove and then locked in place by a screw adjustment which loads against the side of the groove.

3,736,812

SPEED REDUCER RECIRCULATING COOLING SYSTEM

Edward J. Wellauer, Wauwatosa, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed June 28, 1971, Ser. No. 157,205
Int. Cl. F16n *39/02*
U.S. Cl. 74—606 A **3 Claims**



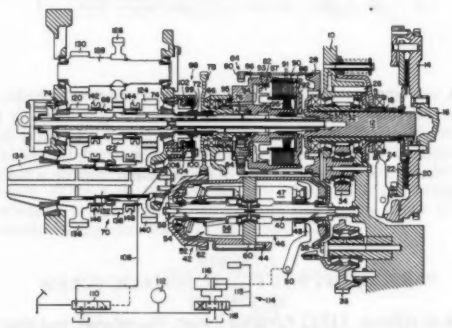
A closed recirculating air cooling system for a speed reducer having a plurality of gears disposed in a housing which comprises a dirven fan for withdrawing warm air from inside the housing, a cooling network for receiving and cooling the warm air, and duct means for conducting cooled air back into the housing. Provision may also be included for collecting oil entrapped in the air and returning it into the speed reducer housing.

3,736,813

COMBINED HYDROSTATIC AND MECHANICAL TRANSMISSION

James Henry Kress, Cedar Falls; Richard Arlo Michael, Waterloo, and Lyle Robert Madson, Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 27, 1971, Ser. No. 211,968
Int. Cl. F16h *5/36, 47/04*
U.S. Cl. 74—740 **15 Claims**



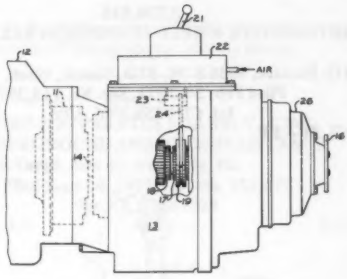
A hydro-mechanical vehicle transmission has a constant speed engine-driven input shaft, which drives a variable displacement reversible hydraulic pump, which, in turn, drives a fixed displacement hydraulic motor at infinitely variable speeds between zero and a predetermined speed in either direction. The hydraulic motor drives the sun gear of the planetary gear train, while the input shaft drives the ring gear of the gear train, the carrier serving as the output of the gear train and being connected to an output shaft by means of a main transmission clutch. The output shaft provides the input to a four-speed forward, one-speed reverse collar shift transmission, which provides different speed ranges with infinitely variable speed characteristics within a limited range, the gear ratios being selected so that the ranges overlap to give infinitely variable output speeds over a relatively wide range.

3,736,814

TRANSMISSION INPUT CLUTCH

Charles H. Herr, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 14, 1972, Ser. No. 217,784
Int. Cl. F16h *5/36, 3/38, 57/10*
U.S. Cl. 74—740 **10 Claims**



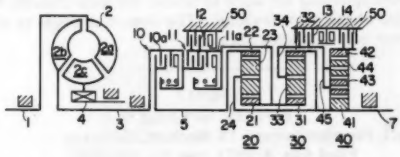
Clutch mechanism for coupling an engine to a transmission of the form in which ratio gears are decoupled from both the driving and driven shafts and braked to a stop to facilitate shifting has epicyclic gear means for imparting a predetermined slow rotation to the ratio gears just prior to full recoupling of the ratio gears to the driving engine and driven load. This assures that all necessary gear engagements are accomplished smoothly and without damage prior to the re-application of full torque load to the transmission.

3,736,815

POWER TRANSMISSION MECHANISM

Shin Ito, and Seitoku Kubo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Jan. 20, 1972, Ser. No. 219,266
Claims priority, application Japan, Feb. 15, 1971, 46/6183
Int. Cl. F16h *3/44, 57/10*
U.S. Cl. 74—759 **6 Claims**



A four-forward-speed transmission comprising an intermediate shaft, two sets of single pinion planetary gears, and a double pinion planetary gear, with all of said components being concentrically arranged between an input shaft and an

output shaft. A first clutch is adapted to apply an input to the intermediate shaft, and a second clutch is adapted to apply an input to both sun gears of the two sets of single pinion planetary gears which are integrally connected. A first brake is adapted to restrict the rotation of both the sun gears of the two sets of single pinion planetary gears, and a second brake is adapted to simultaneously restrict the rotation of a carrier of the second single pinion planetary gear of said two sets of single pinion planetary gears as well as the rotation of a carrier of the double pinion planetary gear. A third brake is adapted to restrict the rotation of a ring gear of the double pinion planetary gear. The first clutch is always in operation when a vehicle is moving forward, and therefore first speed is obtained by operation of the third brake. Second speed is obtained by operation of the first brake, the fourth speed by the operation of the second clutch, and reverse speed by operation of the second clutch and the third brake.

3,736,816

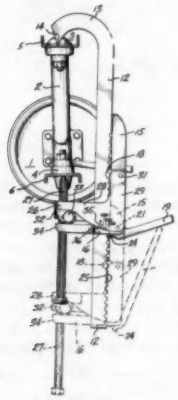
AUTOMOTIVE WHEEL SUSPENSION BALL JOINT TONGS

Loyd O. McAfee, 9036 S. W. 37th, Seattle, Wash.

Filed Feb. 24, 1971, Ser. No. 118,397

Int. Cl. B25b *5/06, 1/06*

U.S. Cl. 81—3 R **10 Claims**



The upper end of a wheel mount spanning bar has a pointed hook engageable with the upper control arm of a wheel suspension adjacent to the upper ball joint. A slide which can be latched in various positions along the spanning bar carries a pivoted angle having a threaded aperture in its swinging end to receive a screw having a pointed end engageable with the lower control arm of the wheel suspension adjacent to the lower ball joint. Pivoted cam lugs bearing on the slide can swing the angle relative to the slide for moving the screw toward the spanning bar hook to relieve the load from the ball joints and check their backlash. The degree of angle to slide movement is indicated by a scale.

3,736,817

BOTTLE OPENER

Otto Huff, Feuerbachstrasse 19, Bochum, Germany

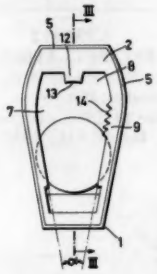
Filed Aug. 4, 1971, Ser. No. 168,837

Claims priority, application Germany, Apr. 21, 1971, P 21 19 359.9

Int. Cl. B67b *7/44*

U.S. Cl. 81—3.1 C **20 Claims**

A combined bottle opener and reclosure device for crown cap and twist-open type bottle closures is composed of a flat, normally open box-like structure rectangular in cross-section and provided with a cover plate across the open side which has an opening therein. The circumferential edge of the opening is provided with a plurality of cap-engaging projections and a



compressible resilient seal pad is retained in the box-like structure below said opening at one end thereof adapted for reclosure of a previously opened bottle.

3,736,818

HYDROSTATIC BEARINGS

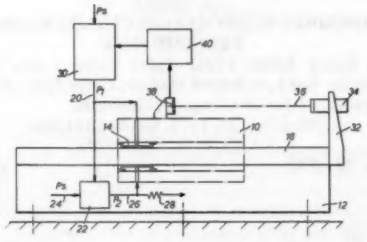
Brian Ennis, Yorkshire, Halifax, England, assignor to William Asquith Limited, Halifax, England

Filed Feb. 16, 1971, Ser. No. 115,421

Claims priority, application Great Britain, July 10, 1970, 33,657/70

Int. Cl. B23b *3/00, 19/02*

U.S. Cl. 82—1 R **7 Claims**



A machine tool has a movable member supported by hydrostatic bearings and the bearing arrangement is controlled by a detector system referenced with a datum element which is independent of the part of the machine tool on which the movable member is supported. The datum element may be a laser beam.

3,736,819

PARTING-OFF BOX FOR AUTOMATIC SCREW MACHINES

John D. Gibbon, 11922 Pavillion Street, Pierrefonds, and Stanley McCarthy, 3499A 42nd Avenue, St. Michel, Quebec, both of Canada

Filed May 12, 1971, Ser. No. 142,536

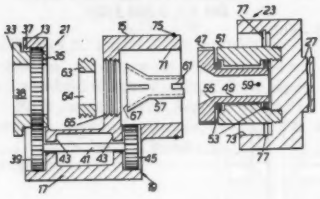
Claims priority, application Great Britain, May 14, 1970, 23,410/70

Int. Cl. B23b *15/00*

U.S. Cl. 82—2.5 **4 Claims**

The invention is particularly directed toward providing a device which can be used with a single-spindle, turret type, au-

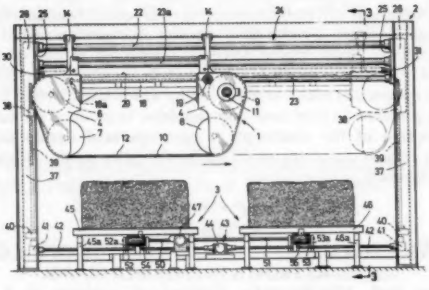
tomatic screw machine to support the free end of the rotating article while the parting-off cut is being made. The device supports and rotates the article at the same speed as the machine for the entire parting-off cut so that the article will not separate from the rod when the cut is nearly completed.



3,736,820
SLICING MACHINE FOR EXPANDED PLASTICS AND SIMILAR MATERIALS

Rolf Jung, 705 Fellbach, Germany, assignor to Krauss u. Reichert Spezialmaschinenfabrik, Fellbach/Wurttemberg, Germany

Filed Dec. 22, 1971, Ser. No. 210,822
Int. Cl. B26d *3/28*
U.S. Cl. 83—4 **11 Claims**



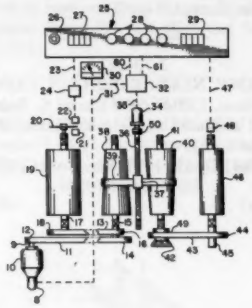
A machine for slicing blocks of material into uniform layers, or sheets, utilizes two oppositely reciprocating parallel tables to supply two blocks of material, and a slicing blade mounted so that it can be alternately applied to each of the two blocks when moving in one of the two reciprocating directions, whereby a layer will be sliced from one or the other of the blocks during each traverse of the two tables.

3,736,821
ELECTRONICALLY ADJUSTED VARIABLE RATIO DRIVE

David Noel Obenshain, Swanton, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,724
Int. Cl. B26d *5/24*
U.S. Cl. 83—76 **5 Claims**

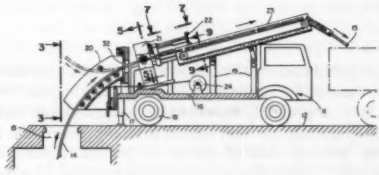
A widely adjustable ratio drive mechanism capable of infinite variation in ratio utilizing timing belts and timing gears is presented which employs an electronic sensing device for actuating a cone pulley transmission to change the ratio of the drive either on demand or automatically, depending upon the mode of operation of the electronic sensing means.



3,736,822
MOBILE APPARATUS FOR SALVAGING UNDERGROUND AND OVERHEAD CABLE

Arthur K. McVaugh, Box 42, Vernfield, Pa.

Filed June 14, 1971, Ser. No. 152,697
Int. Cl. B26d *1/08*
U.S. Cl. 83—155 **5 Claims**

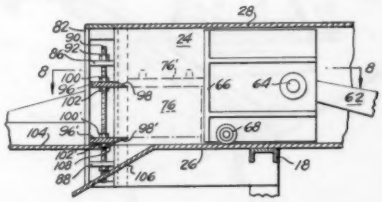


An apparatus and method is provided for salvaging underground and overhead electrical cable. The apparatus of this invention includes a mobile platform such as a truck on which there is mounted an adjustable cable guide which guides the cable to a cable puller which draws the cable from either an underground conduit or from overhead installation. The cable is then fed to a cable cutter which is synchronized with the rate of feed of the cable so as to cut the cable into predetermined lengths. The cut lengths of the cable are then fed to a truck or the like and hauled away to a smelter for recovery of the metal.

3,736,823
STORAGE BATTERY CASING SLICER

Henry Albert Dingler, P.O. Box 143, Cedartown, Ga.

Filed May 14, 1971, Ser. No. 143,475
Int. Cl. B26d *1/02, 7/26*
U.S. Cl. 83—165 **5 Claims**



A storage battery casing slicer has a reciprocable ram movable on a table. A battery is placed on the table to be thrust for-

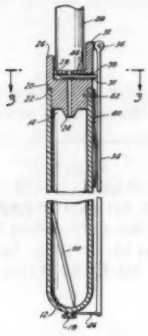
ward by the ram. At least one fixed knife is placed transverse the path of the battery and shears away at least one (preferably the top) wall of the battery casing on forward movement of the plunger.

3,736,824

HYPODERMIC NEEDLE DESTRUCTION DEVICE

Ward G. Dunnican, Clifton, and Caroll S. Sutryn, Allendale, both of N.J., assignors to Becton, Dickinson & Company, East Rutherford, N.J.

Filed July 12, 1971, Ser. No. 161,717
Int. Cl. B26d *5/10*
U.S. Cl. 83—167 **9 Claims**



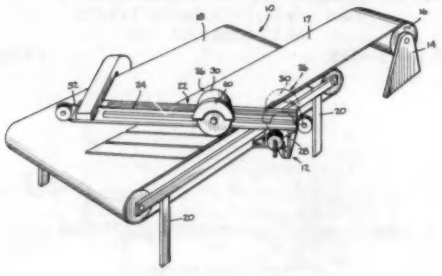
An elongated enclosed receptacle has an orifice formed in a first end thereof for receiving a cannula of a hypodermic syringe. A lever is pivotally mounted to the receptacle and has a blade mounted thereto that moves laterally across the orifice when the lever is rotated about its pivotal connection. A spring member urges the lever to a first position in which the blade does not overlay the orifice. A member is provided on a second end of the receptacle for receiving a loop which is attached to the lever so that the lever may be held against the force of the spring member in a second position in which the blade overlays the orifice and closes the receptacle.

3,736,825

CUTTING MACHINE BLADE SHARPENER

Gerald P. Covell, Taylor, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed July 6, 1971, Ser. No. 159,678
Int. Cl. B26d *7/12*
U.S. Cl. 83—174 **7 Claims**



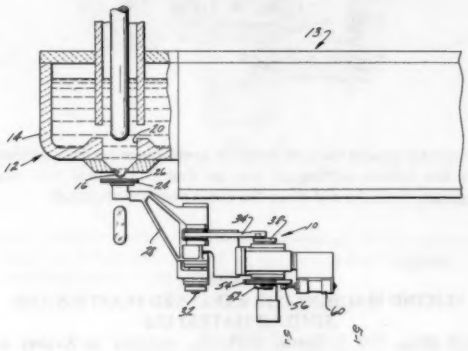
A sharpener operatively associated with a cutting machine for intermittently honing the blade of the cutter assembly thereof.

3,736,826

APPARATUS FOR SHEARING UNIFORM CHARGES OF GLASS FROM A MOLTEN STREAM OF GLASS

William R. Ward, Jr., Columbus, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 28, 1971, Ser. No. 213,123
Int. Cl. B26d *5/08*
U.S. Cl. 83—600 **6 Claims**



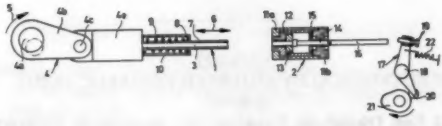
A shearing apparatus for sequentially severing gobs of glass from the end of a vertically descending molten stream of glass at precisely controlled uniform intervals. A pair of arms having cooperating shear blades on their outer ends are pivotally mounted on a common shaft for swinging the blades into and out of contact with each other through arcuate paths of less than 180° in adjacent parallel planes. The blade arms are synchronously driven by connecting rods rotatably attached to eccentrics which are affixed to meshing spur gears powered by a rotary hydraulic motor drivingly connected to one of the gears. An abutment affixed to a rotatable member of the drive train cooperates with a releasable stop which is controlled by a timing means to start and stop the drive train once for each revolution of the abutment. A cam operated deceleration valve retards the motor speed during the latter portion of each cutting cycle.

3,736,827

DEVICE FOR MANUFACTURING A PAIR OF ANNULAR MEMBERS FROM A PREFORMED BLANK

Bruno Hof, Munchenstein, Switzerland, assignor to F.B. Hatebur AG, Basle, Switzerland

Filed Dec. 30, 1971, Ser. No. 214,175
Claims priority, application Germany, Dec. 30, 1970, P 20 64 440.0
Int. Cl. B26f *1/14*
U.S. Cl. 83—126 **10 Claims**



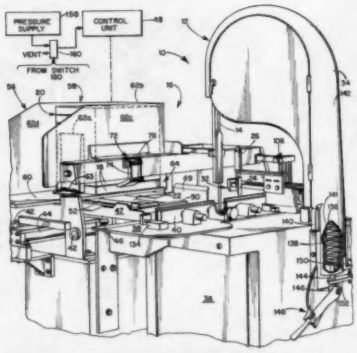
This invention relates to a device for manufacturing two annular members capable of fitting one within the other, from a preformed blank in the form of a cup-shaped inner part integral with and axially displaced relative to an outer annular

part. The apparatus includes two co-operating die and punch members for respectively separating the two annular parts and for perforating the inner cup-shaped part. Further, a fluid actuated arrangement is provided for controlling movement of the die members during operation of the apparatus.

3,736,828
A BIMETALLIC HIGH-SPEED CUTTING BLADE
Toshiei Funakubo, Odawara-shi, Kanagawa-ken, Japan, assignor to Kabushiki-Kaisha Eishin, Tokyo, Japan
Filed Jan. 15, 1971, Ser. No. 106,681
Claims priority, application Japan, Dec. 5, 1970, 45/107780
Int. Cl. B26d *1/46*
U.S. Cl. 83—661 **2 Claims**

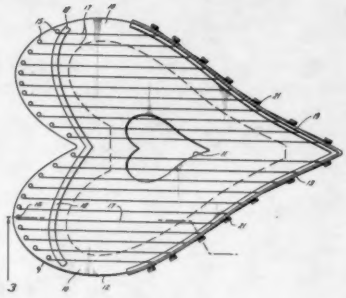
A bimetallic high-speed cutting blade having a series of teeth provided to one of longitudinal edges thereof with a desired space therebetween, the body of each teeth being provided at its forward top end a cut-out portion on which a tip of super-hard materials molded before finally being sintered into a shape substantially equal to a desired final configuration which can act as cutting edge having sharp square corners is welded to brazed so that the machining work of said tip to said desired final configuration after it has been welded or brazed to the tooth body shall be minimized, and the super-hard materials constituting said tip being selected from those having such hardness and flexural strength which shall not be affected by the heat to be applied thereto when the tip is welded or brazed firmly onto the tooth body.

3,736,829
SLICER HAVING AUTOMATIC MATERIALS FEED
Mario J. Pedi, 16 Wickham Road, Winchester, Mass.
Filed Sept. 10, 1971, Ser. No. 179,464
Int. Cl. B26d *1/00*
U.S. Cl. 83—788 **14 Claims**



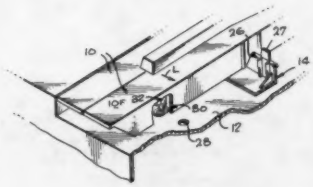
Apparatus for feeding pieces of material to a cutting tool which sequentially cuts slices from each piece of the material stores block-like pieces of the material in a stack from which a single piece is discharged to be sliced, displaces the uncut portion of a piece to the side away from the cutting tool after completion of each slicing advance thereby to retract the uncut portion past the tool without interference, engages the residual portion of the piece which is too thin to be again sliced to control its removal from the machine, and separates the residual piece from the last slice cut from it without damage to the slice.

3,736,830
STRINGED MUSICAL INSTRUMENT
Adele Korry Ledford, 3211 Castlewood, Houston, Tex.
Filed Jan. 31, 1972, Ser. No. 221,892
Int. Cl. G10d *1/12*
U.S. Cl. 84—285 **1 Claim**



A heart shaped stringed musical instrument comprises one hollow sound box having two sound boards with one heart shaped sound hole in the center of the top sound board with a fixed sidewall connecting the top and bottom sound boards, with sidewall also furnishing the drilled holes to house the dual set of rotatable tuning pegs, a flat narrow V shaped extension bridge with a dual set of string holes on the upper edge of both sides, said bridge mounted to the pointed edge and lower sides of the sound board, a wing shaped dual scale bar mounted on the upper surface of sound board to support a dual set of musical strings stretching parallel over the sound board whereby a complete scale of individual musical tones may be produced from either side of the sound board without the use of frets with strings being divided in the center and arranged in a reversable sequence so that instrument may be played with equal dexterity in reversable position, a V shaped bridge on top of the lower boundary to give elevation and support to the lower ends of the strings, and a desirable number of tension pegs situated between the string holes on both of the lower sides of V shaped bridge.

3,736,831
KEY MOUNT FOR ORGAN
Richard L. May, Manhattan Beach, and Alcwyn Flicker, Carson, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 7, 1972, Ser. No. 224,099
Int. Cl. G10c *3/12*
U.S. Cl. 84—434 **2 Claims**



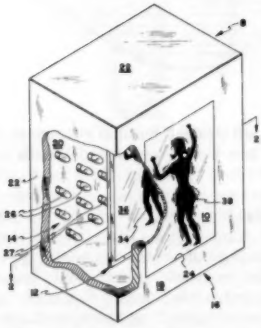
A simplified arrangement for mounting the keys of an organ keyboard, to provide silent stops that limit the downward and

upward movement of the keys and that help to fix the lateral positions of the keys along the keyboard. The system includes a row of rubber grommets mounted in holes formed in the keyboard plate below each key, and limit members mounted on each key and extending downwardly through a grommet. Each limit member has a guide portion that can slide up and down through the hole of the grommet, an upper stop portion that hits the upper surface of the grommet when the key is depressed to a maximum extent, and a lower stop portion that hits the grommet when the key is released to spring up to its uppermost position. The rearward, or fulcrum regions of the keys are pivotally mounted on a bar which has tabs extending into the keys to also fix the locations of the fulcrum regions of the keys.

3,736,832
LIGHT DISPLAY

Harold P. Franke, 839 W. Third North, Salt Lake City, Utah, and Raymond M. Franke, 1624 Calif. Avenue, Salt Lake City, Utah

Filed Jan. 26, 1970, Ser. No. 5,458
Int. Cl. A63j *17/00*; G09f *13/34*
U.S. Cl. 84—464 **5 Claims**

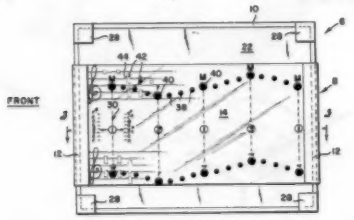


A light display apparatus comprising a plurality of light sources controlled by circuitry and a display screen. The display apparatus can project images of an object onto the screen in several relative positions to create apparent motion in coordination with a sound wave signal. Illumination of the respective light sources is coordinated to respond to various amplitudes of a sound wave signal by contact structure placed in different actuated positions under control of divers voltage amplitudes of an output signal from an audio-amplifier.

3,736,833
MUSIC CHORD TEACHING DEVICE

Samuel Laboy Alvarado, Esparta St. No. 60, Reparto Apolo, Guaynabo, P.R.

Filed Sept. 30, 1971, Ser. No. 185,257
Int. Cl. G09b *15/02*
U.S. Cl. 84—473 **12 Claims**

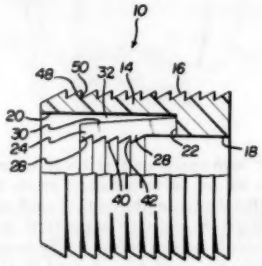


A music chord teaching device wherein a chord diagram is presented to indicate the proper finger positions for a stringed instrument, such as a guitar. The device comprises a two-sided graph, one side of which is provided with a music key selector means and the other side of which displays an associated group of chord diagrams. The indicia is so arranged as to present diagrams for three basic chords and three relative minor chords simultaneously. The key selector means side of the device is also provided with an indication of modulating notes between chord positions and sharps associated with a selected musical key.

3,736,834
CONNECTOR SYSTEM

Robert D. MacDonald, Metamore, Mich., assignor to Cardinal of Adrian, Inc., Adrian, Mich.

Filed Apr. 7, 1972, Ser. No. 242,120
Int. Cl. F16b *13/00*
U.S. Cl. 85—7 **2 Claims**

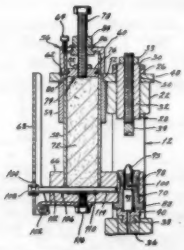


A connector system comprising plastic male and female elements provided with interlocking barbs and serrations so dimensioned that attempted separations of the elements acts to tighten the interlocking forces between them.

3,736,835
RELOADING DEVICE

Roy R. Hanson, 155 Cumberland Drive, Maryland Heights, Mo.

Filed June 30, 1971, Ser. No. 158,366
Int. Cl. F42b *31/02*
U.S. Cl. 86—19 **25 Claims**

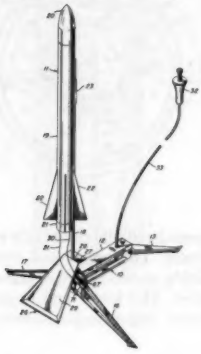


A bullet sizer-seater-lubricator is combined with a cartridge-reloading press having a movable actuating ram. The sizer-seater-lubricator includes oppositely disposed sizing and seating dies and a displaceable lubricator mechanism having a base portion that supports one of the dies. The base portion is engageable by the movable ram to bring the sizing and seating dies in cooperative relationship during the sizing and seating operations. Bullet lubrication follows bullet sizing and is accomplished by feeding lubricant through communicating means in the base portion for injection into the sizing die.

3,736,836
LAUNCHING PAD ASSEMBLY FOR MINIATURE ROCKETS

Jack G. McAllister, Minneapolis, Minn., assignor to Centuri Engineering Company, Inc., Phoenix, Ariz.

Filed July 21, 1971, Ser. No. 164,523
Int. Cl. F41f 3/04
U.S. Cl. 89—1.814 8 Claims

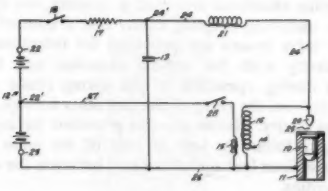


A launching pad assembly having an upright launching rod for releasably supporting a miniature rocket during the initial flight phases of ignition and liftoff. The launching pad assembly base has spaced support legs adjustable to launch the rocket at a predetermined angle to the ground. The assembly further includes a pneumatically operated electrical ignition system to activate the igniter of the miniature rocket with a minimal power supply operable at a position remote from the rocket. A safety key is provided which concurrently indicates continuity of the electrical system and prevents accidental activation of the igniter.

3,736,837
ELECTRICAL INITIATION OF PERCUSSIVE-PRIMED CARTRIDGES

Edward K. Kaprelian, Mendham, N.J., and Howard I. Carroll, Aberdeen, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1971, Ser. No. 212,962
Int. Cl. F41f 9/00; F41d 9/00
U.S. Cl. 89—28 R 5 Claims

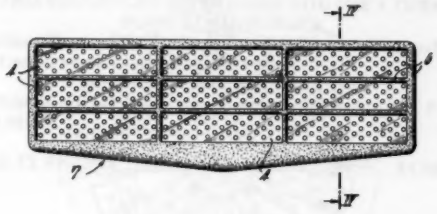


Disclosed is an electrical firing circuit for initiating percussive-primed cartridges wherein the base of the cartridge forms one electrode of a spark gap which has connected thereacross an RF pulse generating means and a charged capacitor. When energized, the pulse means ionizes the air in the spark gap whereupon the capacitor discharges thereacross causing heating of the cartridge base containing the primer mix whereby the primer mix is initiated and hence the cartridge.

3,736,838
PROTECTIVE SHIELDING

Artur Butterweck, Hagen, and Wilhelm Bromsen, Berchum, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Claims priority, application Germany, Dec. 18, 1969, P 19 63 405.0
Filed Dec. 16, 1970, Ser. No. 98,628
Int. Cl. F41h 5/04, 7/04
U.S. Cl. 89—36 A 2 Claims

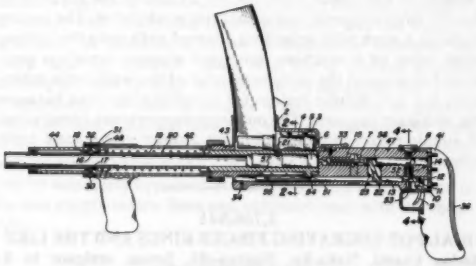


A protective shield of steel, especially for chains of armored cars and tanks, which comprises steel plate means each having a plurality of groups of holes with the holes of each group so arranged that the vertical projection of the connecting lines of their central axes defines a quadrangle while a fifth hole has its axis passing through the point of intersection of the diagonals of said quadrangle, rubber means surrounding said steel plate means.

3,736,839
DUAL MODE SHOTGUN

Carroll Dean Childers, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 228,882
Int. Cl. F41c 11/08; F41d 5/10
U.S. Cl. 89—128 10 Claims



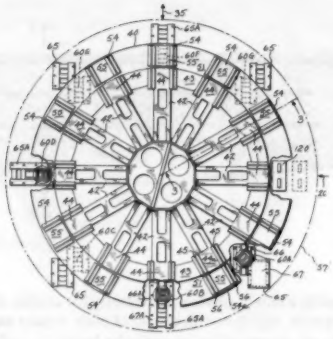
A dual mode shotgun employing a gas driven forwardly moveable barrel to eject spent rounds and automatically reload. The gun is convertible from automatic to a single fire mode. In the single fire mode the driving gas is vented to the atmosphere to prevent movement of the barrel and the gun may be breech loaded with special purpose rounds. In the automatic mode the forward movement of the barrel provides for reloading and mechanically recocks the gun.

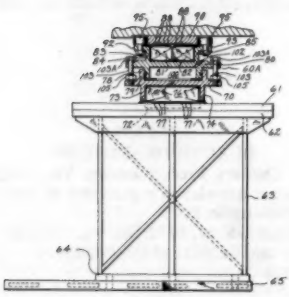
3,736,840

WORKTABLE EXTENSION AND SUPPORTING STRUCTURE

Alex A. Durand, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Dec. 14, 1971, Ser. No. 207,845
Int. Cl. B23c 1/14; B23f 23/00
U.S. Cl. 90—58 B **8 Claims**





A work table extension system for a machine tool which is arranged with an existing work table of a machine in order to enlarge its workpiece capacity, i.e. to enable the machine to handle large diameter and/or heavier workpieces. The system includes a work table extension adapted to fit onto the existing work table of a machine, outrigger support members positioned to support the peripheral edge of the work table extension, and a hydraulic system for equalizing the load between the outrigger supports. The outrigger supports are constructed to enable rotary motion and linear motion of the work table extension.

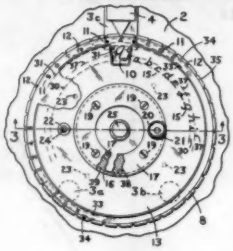
3,736,841

DIAL FOR ENGRAVING FINGER RINGS AND THE LIKE

Sadao Usami, Naka-ku, Nagoya-shi, Japan, assignor to B. Jadow and Sons Inc., New York, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,661
Claims priority, application Japan, Dec. 28, 1970, 45/141629 (utility model)
Int. Cl. B23c 1/16; B43l 13/10
U.S. Cl. 90—62 R **15 Claims**

A character dial assembly used with a machine for engraving characters on finger rings and other metallic ornamental articles, which comprises a lower circular dial member and an upper circular dial member having a diameter smaller than the lower dial member. Each of the two dial members has its upper surface engraved with a set of various characters which are disposed circumferentially on the dial member in equal spaced relationship with one another. The lower dial member also has its upper surface impressed with index characters on its upper surface corresponding to the characters engraved thereon and disposed radially outwardly of the corresponding engraved characters. The upper dial member has a cut out section for obtaining access to the engraved characters on the lower dial member. The lower and upper dial members are coaxially connected together for rotation relative to each other.

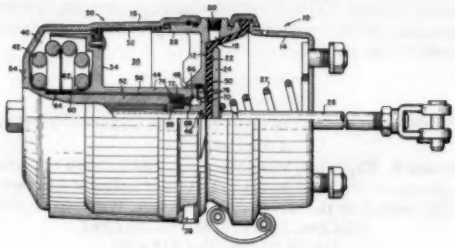


3,736,842

BREATHING AND FAILURE DETECTION SYSTEM FOR SPRING BRAKES

Harry M. Valentine, Elyria, Ohio, assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 22, 1972, Ser. No. 228,024
Int. Cl. F01b 25/26, 7/00, 21/02
U.S. Cl. 91—1 **8 Claims**



A service and spring brake actuator including service and spring brake chambers arranged in tandem, the spring brake chamber including a spring cavity and a control cavity and wherein valve means are provided for interconnecting the spring cavity with the service chamber and the control chamber during operation of the spring brake actuator in order to prevent the entry of dirt and other foreign matter into the spring cavity. Means are also provided for automatically indicating a failure or loss of load of the main spring and failure or serious leakage of the seal between the control and spring cavities.

3,736,843

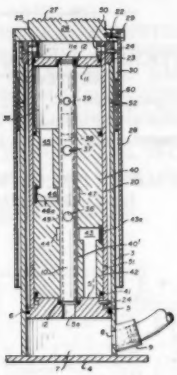
VIBRATOR APPARATUS

James A. Leibundgut, Waterford, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed May 20, 1971, Ser. No. 145,186
Int. Cl. F01l 21/02
U.S. Cl. 91—234 **11 Claims**

A vibrator apparatus adapted to impart vibrations to a body and including a base structure and a tubular member attached thereto at one end to create a fluid cylinder. A ram piston is

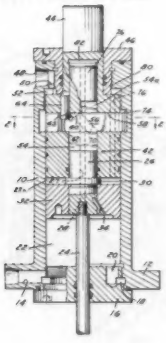
mounted in sliding relationship within the fluid chamber and is operably connected to a vibrator piston assembly. The second end of the tubular member is adapted to receive the vibrator piston assembly having attached thereon a bearing surface to contact the body being vibrated. Fluid pressure is introduced into the fluid cylinder in the area between the base plate and



the ram piston whereby the vibrator assembly and ram moves in a direction to cause contact of a predetermined force between the bearing surface and the body being vibrated. Thereafter, the fluid pressure within the cylinder causes the vibrator assembly to reciprocate in a manner to impart a desired amplitude and frequency of vibration on the body being vibrated.

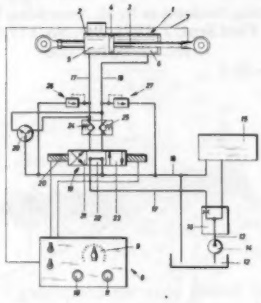
ERRATUM
For Class 91—390 see:
Patent No. 3,736,845

3,736,844
LINEAR ACTUATOR WITH LOCKING MEANS
William R. Jahnke, Rochester, Mich., assignor to KMS Industries, Inc., Ann Arbor, Mich.
Filed Apr. 29, 1971, Ser. No. 138,434
Int. Cl. F15b *15/26*
U.S. Cl. 92—24 **13 Claims**



A linear actuator, lock, and release mechanisms for coupling the rod of a power cylinder to an actuatable member subject to secondary forces such as a die or a core of an injection molding machine. The combination includes a piston-cylinder power system incorporating a cross-block movable by a camming force into a locking recess in a power cylinder wall, and a release mechanism utilizing the cross-block to mechanically exert a high breakaway force on the actuatable member upon the initiation of a retraction motion.

3,736,845
VARIABLE LENGTH UPPER GUIDE ROD FOR A THREE-POINT LOADING RACK
Helmut Weiste, 4771 Sieningsen, and Ferdinand Schumacher, Coesterweg 42, Soest, both of Germany
Filed May 18, 1971, Ser. No. 144,527
Claims priority, application Germany, May 22, 1970, P 20 25 040.2
Int. Cl. F15b *13/16*
U.S. Cl. 91—390 **8 Claims**

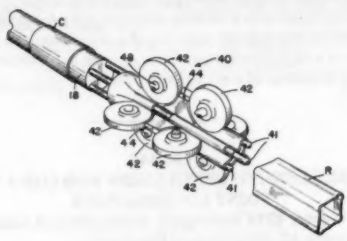


A hydraulic three-point loading rack, for agricultural prime movers, has a variable length upper guide rod in the form of a cylinder, a piston guided in the cylinder, a piston rod connected to the piston and hydraulic supply-return lines connected to the cylinder chambers on opposite sides of the piston. Respective normally closed, pressure-holding valves are connected in each of the two supply-return lines and opened only by a predetermined supply pressure in the associated line, these valves being interposed between a hydraulic pump, with associated return reservoir, and the cylinder chambers. A distributing valve is connected between the pump and the shut-off valves and has a neutral position shutting off both cylinder chambers from the pump, and a pair of operating positions, in each of which one line is supplied with hydraulic fluid and the other line returns hydraulic fluid to the reservoir. A nominal-actual value setter is associated with an actual value selsyn connected to the piston rod, and may be selectably bypassed. A three-way cock is connected to the two supply-return lines and communicates with the reservoir.

3,736,846
NON-CYLINDRICAL CONTAINER BODY MAKER
Henry E. Frankenberg, Hindsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 12, 1971, Ser. No. 114,930
Int. Cl. B31b *1/38*
U.S. Cl. 93—82 **8 Claims**

A container body maker including means for forming a completed cylindrical container body and a means for reshaping the cylindrical container body. The reshaping means in-

cludes angularly spaced posts arranged to support the cylindrical container and bending means disposed between the posts.



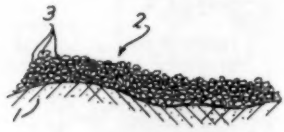
The bending means serve to depress the portions of the cylindrical body spanning the posts to reshape the body.

3,736,847

SYNTHETIC TERRAIN COVERING

James R. Hickey, Green Bay, Wis., assignor to Robert H. Mosher, doing business as R. M. Associates, Neenah, Wis.

Filed Sept. 7, 1971, Ser. No. 177,959
Int. Cl. E01c *13/00*
U.S. Cl. 272—56.5 **10 Claims**



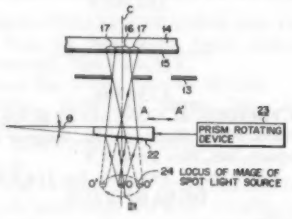
A synthetic terrain covering comprising a multiplicity of small, curved, irregularly shaped flakes or platelets of thermoplastic resin. The peripheral edges of the platelets are provided with slits or serrations which, along with the curved configuration, enables the platelets to mechanically interlock and resist shifting, particularly on steep terrain. The platelets can be used alone as a substitute for snow, or it can be used with natural or artificial snow as a covering for ski hills and trails, tobogganing areas, snowmobile trails, and other recreational areas.

3,736,848

METHOD OF PREPARING THE SCREEN OF A COLOUR TELEVISION PICTURE TUBE AND DEVICE PERFORMING THE METHOD

Asahide Tsuneta, Kawasaki, and Makoto Ikegaki, Fukaya, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 15, 1971, Ser. No. 189,723
Claims priority, application Japan, Oct. 20, 1970, 45/91623
Int. Cl. G03b *27/00*
U.S. Cl. 95—1 R **5 Claims**



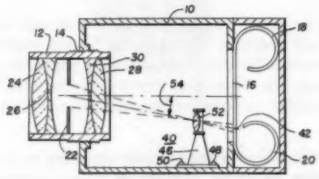
A method of preparing the screen of a colour television image pickup tube by photographic printing which consists in disposing a prism tapered to a prescribed angle between a screen being prepared and a source of light so fixed as to face the screen and projecting light on the screen while causing the prism to revolve, thereby forming on the screen light-exposed portions having a smaller area than the light-permeable portions of a shadow mask and a device for performing the method.

3,736,849

ON-FILM OPTICAL RECORDING OF CAMERA LENS SETTINGS

Richard E. Thompson, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 17, 1971, Ser. No. 125,236
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **10 Claims**



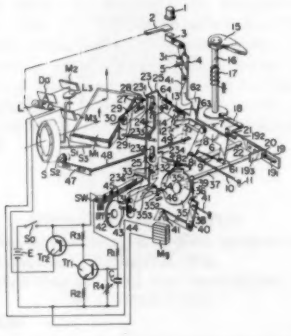
Apparatus is provided for recording a representation of the camera lens aperture and focus setting on the film of a camera at the same time that the photographic image is recorded on such film. A data lens means is provided intermediate the camera lens and camera film whereby the aperture and focus setting of the camera lens may be determined through measurement of both the location and the size of a data image provided by such data lens means. Such data lens means requires no electrical power, is low in weight, and does not result in an increase in the external dimensions of the camera in which such data lens means is installed.

3,736,850

SINGLE-LENS REFLEX CAMERA PROVIDED WITH A DATA PHOTOGRAPHING DEVICE

Mitsuo Ishikawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,757
Claims priority, application Japan, Dec. 28, 1970, 45/123916
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **6 Claims**



A single-lens reflex camera provided with a data photographing device which comprises a mirror movable up and down

in response to shutter operation. The mirror is disposed in a data-photographing optical path and may be maintained in raised position for a predetermined time, during which the image of data illuminated by a light source may be projected and recorded under proper exposure on the surface of a sensitive film simultaneously with object-photographing.

3,736,851

AUTOMATIC EXPOSURE TIME CONTROL CIRCUIT FOR ELECTRONIC SHUTTERS

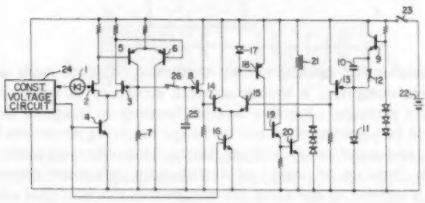
Shoigo Ono, Koboku-ku, Yokohama; Ichiro Hamaguchi, Shinagawa, Tokyo, and Kenji Toyoda, Shinyuku-ku, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,780

Claims priority, application Japan, Sept. 30, 1970, 45/85418

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **13 Claims**



A circuit for automatically controlling the open time of an electronic shutter in accordance with the light of a scene being photographed having a charging circuit which includes a capacitor and a silicon diode connected in series and which is charged responsive to the opening of the shutter, a silicon photodiode for providing a terminal voltage logarithmically proportional to the intensity of the light, and an electrical circuit for combining the terminal voltages of the silicon diode and the silicon photodiode and closing the shutter when the combined terminal voltage reach a predetermined value.

3,736,852

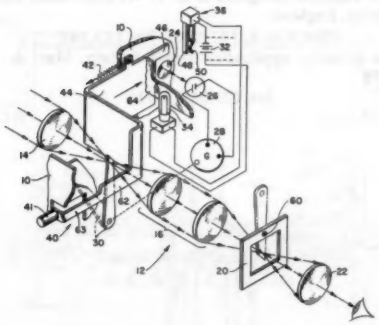
CAMERA BATTERY CHECKER

William Philip Ewald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,936

Int. Cl. G03b *17/18*; G01j *1/42*

U.S. Cl. 95—10 C **7 Claims**



Battery checking apparatus for use in cameras utilizing a photosensitive element in circuit with a galvanometer, the galvanometer having a deflection related to the intensity of scene light incident onto the photosensitive element. The apparatus provides a tungsten lamp which is connectable in circuit with a battery to be checked, and a shield which is operative for blocking the scene light from impinging onto the photosensitive element. When the tungstem lamp is connected in circuit with the battery and scene light is blocked, the photosensitive element is illuminated only by light from the tungstem lamp, the luminosity of which varies with the battery voltage. The varying luminosity is received by the photosensitive element which results in a deflection of the galvanometer that is related to the voltage available from the battery. The amount of deflection of the galvanometer may be shown by a signal utilized to indicate the voltage level of the battery.

3,736,853

APPARATUS FOR AUTOMATICALLY FIRING PERCUSSION-IGNITABLE FLASHLAMPS

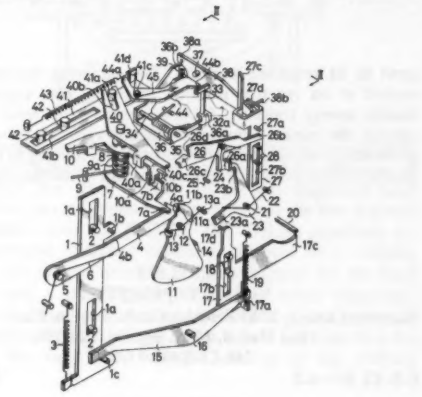
Shogo Suzuki, Atsumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1972, Ser. No. 218,897

Claims priority, application Japan, Jan. 21, 1971, 46/1848; Nov. 25, 1971, 46/94726; Nov. 25, 1971, 46/94727

Int. Cl. G03b *15/04, 17/20*

U.S. Cl. 95—11.5 R **15 Claims**



A camera is provided with a socket for receiving a flash unit containing percussion-ignitable flash lamps and spring loaded strikers retained in cocked positions. A sensing system includes a shift member which moves to a first position in the absence of a flash unit, a second position in the presence of a cocked striker and a third position when the cocker is in its uncocked position. A transmission lever is located in the path of the spring loaded shutter opening member when the shift member is in its second position so that upon release of the shutter opening member it drives the shift member to release the striker and ignite a flashlamp. A light detecting member shifts the transmission lever out of the path of the opening member when the ambient light is sufficient for photography. A system provides a warning signal in the absence of a flashlamp or when a cocked striker is not in position.

3,736,854

FILM METERING MECHANISM FOR CAMERAS

David E. Beach, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

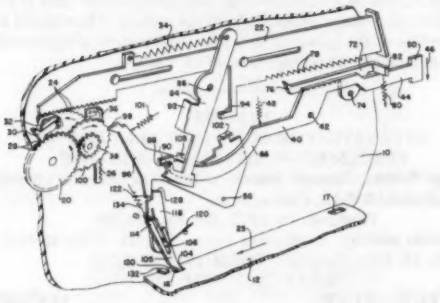
Filed Dec. 1, 1971, Ser. No. 203,524

Int. Cl. G03b *1/62, 9/68*

U.S. Cl. 95—31 FM **11 Claims**

A camera for perforated roll film includes a transport mechanism for advancing film along an exposure plane and a metering mechanism for selectively disabling the transport mechanism. A film sensing pawl is movable from a retracted position on one side of the exposure plane to an extended

position transversing the exposure plane when intersecting one of the film perforations, at which time, movement of the film along the exposure plane moves the sensing pawl to meter the transport mechanism. After exposure, movement of the film moves the sensing pawl into a cam surface to return the



pawl to its retracted position. The metering mechanism is moved to an inactive position following film exposure by kinetic energy transferred from a high energy lever used to operate the camera's shutter. A backup system is provided for preventing the metering mechanism from moving to its active position in the event of a false movement of the sensing pawl.

3,736,855

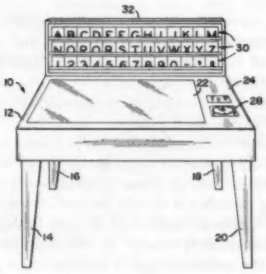
VISUAL TYPESETTER

Eduardo Cuenca, 2735 Bel-Aire Circle, Tampa, Fla.

Filed Mar. 8, 1971, Ser. No. 121,796

Int. Cl. B41b *13/02*

U.S. Cl. 95—4.5 **3 Claims**



A device and method for setting copy comprising placing various copy, in the form of indicia-bearing material, halftones, or other art work, onto a translucent plaque having an electrostatic charge thereon. The copy is capable of carrying the electrostatic charge such that it is removably positioned thereon yet maintains the desired position until further processing. A photographic sheet is then placed over the prearranged copy and exposed to light transmitted through the translucent plaque whereupon a positive or negative is formed. The sheet is then used in lithography, typography, engraving, silk screen printing, sign making and similar technologies which utilize photographic sheets.

3,736,856

PHOTOGRAPHIC CAMERA

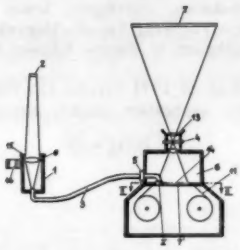
Walter Grossmann, Russikon, and Kurt Thaddey, Buchs, Zurich, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 23, 1971, Ser. No. 117,890

Claims priority, application Switzerland, Feb. 27, 1970, 2946/70; Jan. 8, 1971, 241/71

Int. Cl. G03b *17/24*

U.S. Cl. 95—1.1 **8 Claims**



Apparatus for photographing stationary objects such as paintings comprises a mobile camera structure in which is located a principal objective lens for forming an image of the object to be photographed and an image receiving means such as film, and a stationary housing having an auxiliary objective lens for forming an image of a stationary reference object which is subject to the same illumination as the principal object. The fixed position housing containing the auxiliary objective lens is located spatially from the mobile camera structure and is coupled to the latter by means of a flexible light conductor which thus provides mobility for the camera and carries the image formed by the auxiliary objective lens into the camera for imaging on the film adjacent the image of the principal object. Either a single shutter or two separate synchronized shutters are used to expose a film in the image plane of the principal objective lens to the images formed by the principal and auxiliary objective lenses. Instead of a flexible light conductor the mobile camera structure and stationary housing for the auxiliary objective lines can be coupled by a flexible electric cable which transmits signals from photoelectric cells in the auxiliary objective lens housing and mounted behind the auxiliary objective lens to lamps mounted in the camera structure above the image plane of the principal objective lens.

3,736,857

PRINTED CIRCUIT MASK MANUFACTURE

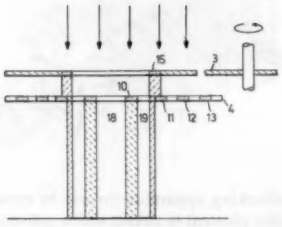
Reginald Ian Williamson, Sandbach, and Roy Lowey, Poynton, both of England, assignors to L. T. W. Electronics Limited, Congleton, England

Filed Feb. 8, 1971, Ser. No. 113,348

Claims priority, application Great Britain, Mar. 4, 1970, 10,358/70

Int. Cl. B43l *13/18*

U.S. Cl. 95—12 **8 Claims**



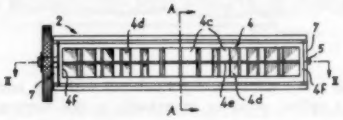
Apparatus for forming a photographic image used in printed circuit formation comprising a very accurate fixed master

mask with a plurality of colored or polarized transparencies, a diaphragm with a like plurality of colored or polarized transparencies any one of which can be brought into alignment with the master mask to select one of the transparencies thereon, and an optical system sending light through the diaphragm and mask to form an accurately dimensioned and located image of the mask on a photographic surface.

3,736,858
AIR VENTS

Jacques Mercier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt (Haute de Seine) and Automobiles Peugeot, Paris, France

Filed Mar. 19, 1971, Ser. No. 125,952
Claims priority, application France, Mar. 24, 1970, 7010581
Int. Cl. F24f *13/06*
U.S. Cl. 98—406 **7 Claims**

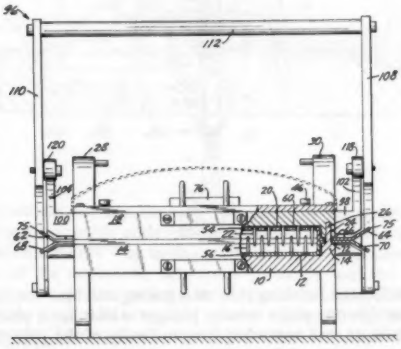


This air vent intended for private or office rooms, or for the passenger compartments of vehicles, notably automobiles, comprises an air outlet and a diffuser movable fitted therein to permit a variable and orientable diffusion of the air stream flowing therefrom, said outlet comprising part-cylindrical lips receiving a drum-shaped diffuser comprising in turn two opposite cylindrical sectors rotatably fitted in said lips about their common axis, at least one of said sectors being adapted to act a shutter to close said outlet completely in one position, air circulation passage being formed between said sectors, said passages being wider at one end than at the opposite end, whereby a divergent diffusion or a convergent projection is obtained accordingly as the drum is disposed with the wider or narrower ends of its air circulation passages on the outlet side of the diffuser, the air stream thus obtained being adapted to be oriented at will also by rotating said drum.

3,736,859
COOKING IRON

Arnold August Carlson, 4350 Pilot Knob Road, Saint Paul, Minn.

Filed June 10, 1971, Ser. No. 151,805
Int. Cl. A47j *37/04*
U.S. Cl. 99—331 **10 Claims**

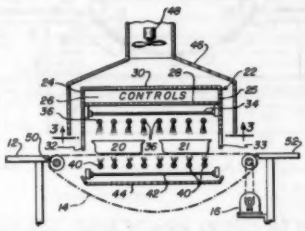


A cooking iron which includes opposed upper and lower platens each having a surface bearing a plurality of outwardly extending, food-piercing metal needles, and a pair of removable perforated stripper plates adapted to lie against the upper and lower platens, the needles of said platens protruding through the perforations in the stripper plates. The cooking iron may also include pressural means for urging the platens into facing, closed relationship and spring loaded hinge means for connecting said upper and lower platens.

3,736,860
INFRARED COOKING APPARATUS

Alfred Vischer, Jr., Tucson, Ariz., assignor to Vischer Products Company, Chicago, Ill.

Filed Apr. 6, 1971, Ser. No. 131,734
Int. Cl. A47j *37/04*
U.S. Cl. 99—339 **5 Claims**

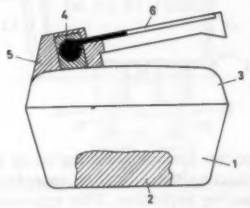


The cooking method involves the simultaneous application of infrared radiation to a food product and the spraying of steam onto the food product to provide improved heat penetration into the product and to minimize the loss of juices and moisture from the product. The cooking apparatus includes infrared radiating elements disposed in a cooking chamber above and below a perforate support for the food product and a plurality of steam spray tubes interposed between the food product and the source of radiation, the food product support being a motor driven conveyor belt for carrying the food into, through and out of the cooking chamber.

3,736,861
COOKING UTENSIL WITH GAUGE

Karl Kristian Kobs Kroyer, Vigy J., and Erik Nielsen, Hojbjerg, both of Denmark, assignors to said Kroyer, by said Nielsen

Filed Feb. 2, 1971, Ser. No. 111,813
Claims priority, application Great Britain, Feb. 2, 1970, 4,890/70; Nov. 20, 1970, 55,294/70
Int. Cl. A47j *36/00*
U.S. Cl. 99—343 **6 Claims**



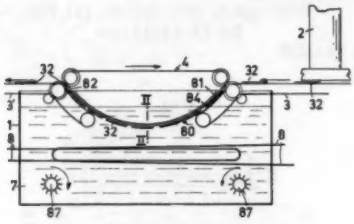
A cooking utensil having a heat indicator comprising an angularly shaped tube closed at both ends and partially filled with a liquid evaporating at normal cooking temperature, one end of said tube being located adjacent to the cooking space of the cooking utensil and the other end being located in such a manner that vapor generated at said first end of the tube is condensed at said other end.

3,736,862

DEVICE FOR THE MANUFACTURE OF A COOKED DELICACY

Herman Crommelijnck, Destouvellestratt 5, Schaarbeek, Belgium

Filed Jan. 13, 1969, Ser. No. 790,798
Claims priority, application Belgium, Jan. 12, 1968, 53296; Jan. 16, 1968, 53384
Int. Cl. A475 *27/14*
U.S. Cl. 99—353 13 Claims



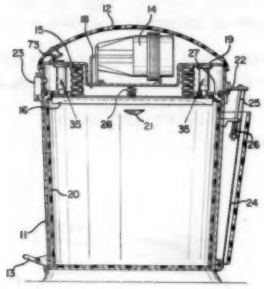
Apparatus for cooking slices of dough includes an endless conveyor member such as a belt or drum dipping into a pan of hot fat for conveying the slices through the fat and a supply belt and discharge belt cooperating with the endless conveyor for gripping the slices therebetween at least at the surface of the fat. A shaping device bends the cooked slices to the shape of potato chips.

3,736,863

TRASH COMPACTOR

William S. Brucker, Towson, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 21, 1971, Ser. No. 145,762
Int. Cl. B30b *1/32*
U.S. Cl. 100—45 9 Claims



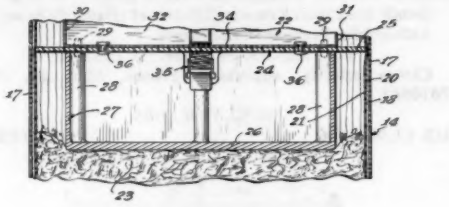
A trash compactor for home use including a receptacle, a lid, a latch connecting the lid to the receptacle and an air-operated compacting apparatus. This apparatus includes an expansible air bag and a compressor for producing a pressure therein. Preferably, the air bag is supported by the lid and terminates in a stiff platen member which cooperates with the bottom of the receptacle to compress trash placed therein. The compressor is operated until a predetermined condition is reached, whereupon it is automatically shut down and the air is exhausted from the bag. Means may be provided for guiding the platen and/or returning the bag to its contracted position.

3,736,864

REFUSE COMPACTOR WITH RAM WIPER

Michael J. Bottas, Saint Joseph, and Charles R. Difley, Niles, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 876,401, Nov. 13, 1969. This application Apr. 29, 1971, Ser. No. 138,776
Int. Cl. B30b *15/06*
U.S. Cl. 100—53 10 Claims



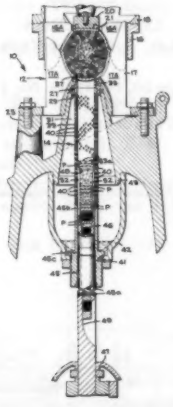
A refuse compactor having a cabinet with top and bottom sections, a refuse receiver receptacle in the bottom section having an open top and side walls, a refuse holding bag in the receptacle having flexible sides, a compacting ram in the top section movable in a cycle into and out of the receiver receptacle and bag for compacting refuse in the bag and a flexible wiper blade extending from the ram and having an outer periphery contacting the bag inner surface during the cyclic movement to press the bag against the side walls of the receptacle and also to provide a barrier across the bag in the space between the ram and the bag.

3,736,865

FRUIT PROCESSING APPARATUS

James M. Hait, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 19, 1971, Ser. No. 135,256
Int. Cl. B30b *9/02*
U.S. Cl. 100—98 R 7 Claims



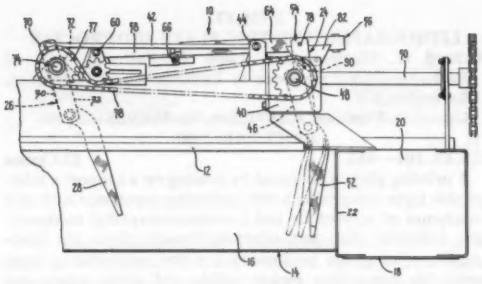
A perforated finishing tube of a juicing machine receives a reciprocable one-piece tubular plunger which has a plurality of slots in its wall extending longitudinally of the plunger to define a plurality of finger-like members that move in close proximity to the inner surface of the discharge tube to remove fruit material caught in the perforations of the tube and extending inwardly thereof.

3,736,866

BALE PACKER FORK ADJUSTMENT

Frank T. Herrick, Pontiac, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 171,893
Int. Cl. B30b *1/00*
U.S. Cl. 100—189 6 Claims



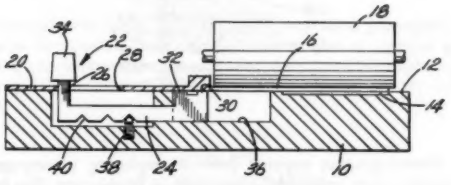
Adjustment mechanism for a baler packer in which a pair of feed-fork assemblies are operated in timed relation to each other for delivery and conveying of crop material into a baler chamber. One of the fork assemblies in the feeder mechanism is adjustable in vertical and longitudinal directions in a plurality of predetermined locations. The adjustment means comprise a plurality of selectively alignable apertures of differing configurations and a connecting pin is provided for insertion through selected ones of aligned apertures at predetermined adjusted positions to thereby prevent inadvertent incorrect repositioning of the fork assembly relative to the drive mechanism and the baling chamber to prevent interference of the fork assembly with the walls of the baling chamber.

3,736,867

TRAVELING CYLINDER PRINTER WITH SELECTIVELY SLIDABLE CODE BARS HAVING PLURAL MARKING MEANS

Darwin S. Bates, Euclid, and Edward R. Szymanski, Chesterland, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 11, 1971, Ser. No. 170,857
Int. Cl. B41j *7/32*; B41f *3/20*
U.S. Cl. 101—45 5 Claims



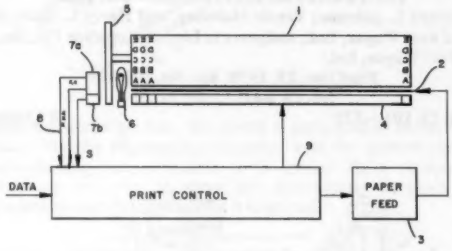
Apparatus for mechanically imprinting a document with machine scannable code indicia including timing marks and detail data marks. The timing marks are imprinted along one edge of the document, selectively by fields, and the detail marks are imprinted in the same columnar location, selectively within the fields, in vertical spaced alignment with the timing marks. The apparatus comprises a bed for supporting an embossed printing plate and a document to be imprinted. A plurality of selectively settable indicia marking elements are provided, each including a plural code marking means, for manually positioning the code marking means to a printing position in printing relationship with the document. A platen is provided for movement across the bed to imprint the document from the code marking means at the position and, simultaneously, from the printing plate.

3,736,868

APPARATUS FOR PRINTING SERIALLY RECEIVED DATA

Henry P. Briggs, Beverly, Mass., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Continuation of Ser. No. 25,535, April 3, 1970. This application Mar. 1, 1972, Ser. No. 231,049
Int. Cl. B41j *1/34*; G06f *7/00, 15/00*
U.S. Cl. 101—93 C 3 Claims



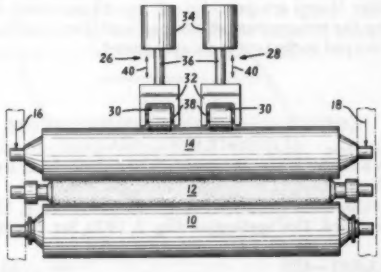
A printer and method for printing continually received serially arranged data in which those characters to be printed in a group of columns at the beginning of each line are individually stored in single-character storage registers during operations performed to initiate the line as line feed and carriage return. A separate control circuit is associated with each of these beginning columns and causes the stored character to be printed by an individual print hammer dedicated to the column. The hammers for printing in the remaining columns of the line share control circuits and storage registers. The printer has a moving type carrier and the number of control circuits and storage registers for the remaining columns is substantially equal to the ratio of the time the carrier requires to present a complete font of type characters to the document to the time interval at which successive characters are received from the data source. This allows printing of all those characters to be printed in the remaining columns with a minimum number of storage registers and control circuits.

3,736,869

PRESSURE ROLLER DEVICE FOR A ROTOGRAVURE PRINTING PRESS

John C. Motter; John C. Motter, Jr., both of York, Pa., and Louis A. Lachman, Princess Anne, Md., assignors to John C. Motter Printing Press Co., York, Pa.

Filed Mar. 16, 1971, Ser. No. 124,832
Int. Cl. B41f *9/00*
U.S. Cl. 101—153 10 Claims



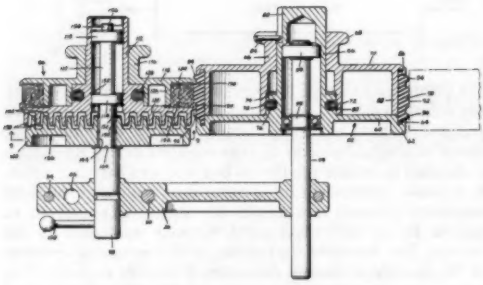
Pressure roller device for equalizing the printing pressure in a rotogravure press. The press includes a printing cylinder, an

impression roller and a back-up roller arranged in tangential relationship. It also includes common movable supports for the ends of the impression roller and back-up roller to maintain the impression roller and back-up roller in tangential relationship and to bring the impression roller into pressure engagement with the printing cylinder. At least one pressure roller device is provided, according to the present invention, for applying a force against the back-up roller intermediate the ends thereof in the direction of the impression roller and the printing cylinder. This force increases the uniformity of the pressure applied by the impression roller against the surface of the printing cylinder.

3,736,870
ROTARY IMPRINTER WITH INK WHEEL HAVING TEMPERATURE CONTROLLED INK PAD

Leonard L. Johnson; Tennis Mahoney, and Harry L. Hart, all of Fort Wayne, Ind., assignors to Lincoln Logatype Co., Inc., Fort Wayne, Ind.

Filed Dec. 23, 1970, Ser. No. 100,879
Int. Cl. B41f *13/10, 31/26*
U.S. Cl. 101—329 **8 Claims**



A marking apparatus which includes marking and inking wheels mounted individually for rotation and with the peripheries thereof in operative engagement. The marking wheel includes a rim portion having a closed loop of rubber type removably telescopically fitted over the exterior thereof. The opposite circumferential edge portions of the type loop are secured to the wheel so as to prevent the loop from becoming separated from the wheel during rotation. The means for securing the loop to the wheel is in two parts, these parts being removably secured together such that removal of one of the parts permits facile replacement of the type loop on the wheel.

The inking wheel includes an annular ink-retaining pad on the periphery thereof which maintains the type on the marking wheel continuously coated with ink during marking wheel rotation. Means are provided on the inking wheel for controlling the temperature of the pad such that transfer of ink from the pad to the type is always assured.

3,736,871
COPPER (I) SALT-HYDROPHILIC BINDER LITHOGRAPHIC IMAGES

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 864,867, Oct. 8, 1969, abandoned. This application Aug. 3, 1970, Ser. No. 60,619
Int. Cl. B41n *1/00, 3/00;* G03f *7/02*
U.S. Cl. 101—456 **11 Claims**

A lithographic printing plate having an ink-receptive image comprising a hydrophilic colloid binder, an insoluble salt or complex of copper (I) with an oleophilogenic compound, and metallic silver is made by treating a hydrophilic colloid-silver image with an activator containing cupric ions and said oleophilogenic compound. Activators are aqueous solutions containing copper (II) ions and a halogen ion.

3,736,872
LITHOGRAPHIC PRINTING PLATE AND PROCESS

Richard H. Martens, and Ralph D. Zaffrann, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

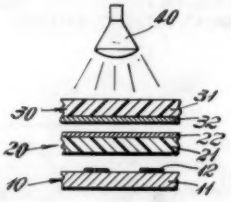
Filed Jan. 4, 1971, Ser. No. 103,925
Int. Cl. B41n *3/00*
U.S. Cl. 101—462 **12 Claims**

A printing plate is prepared by coating on a support a lithographic layer comprising a self-hardening copolymer such as a copolymer of acrylamide and 2-acetoacetoxyethyl methacrylate, colloidal silica and titanium dioxide. Over the lithographic coating can be located a silver precipitating layer preferably comprising nickel sulfide and silver iodide. An image is provided in the silver precipitating layer by diffusion transfer and treated with a thiol or similar sulfur containing material to improve the ink-water balance of the plate. In an integral product the nucleated lithographic layer is coated with a silver halide layer and processed to provide a silver image after which the silver halide layer is removed.

3,736,873
PLANOGRAPHIC PRINTING PLATE ASSEMBLY AND METHOD OF MAKING

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed July 12, 1971, Ser. No. 161,743
Int. Cl. B41m *1/06;* B41n *1/12*
U.S. Cl. 101—467 **10 Claims**



Thermographic copying process employing planographic printing plate assembly comprising a translucent film-base printing plate and a translucent film-base transfer sheet containing a heat-transferable oleophilic imaging layer. The plate comprises a normally heat-shrinkable plastic film foundation having a thin planographic layer thereon and imaging occurs at a temperature below the shrink temperature of the plate.

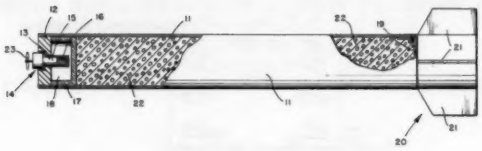
ERRATUM

For Class 101—2 R see:
Patent No. 3,736,882

3,736,874
CHEMILUMINESCENT EXPULSION DEVICE

Robert L. Gerber, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1970, Ser. No. 48,625
Int. Cl. F42b *25/12*
U.S. Cl. 102—2 1 Claim

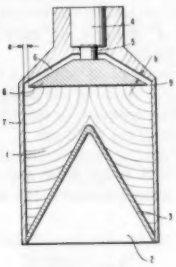


An improved dispenser for disseminating chemiluminescent particles from the air in a concentrated signal pattern which increases signal utility in conditions of high background illumination.

3,736,875
EXPLOSIVE CHARGE WITH ANNULAR IGNITION GAP

Ludwig Buckilsch, A-4866 Unterach, Austria, assignor to Dynamite Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 23, 1970, Ser. No. 74,801
Claims priority, application Germany, Sept. 23, 1969, P 19 48 058.1
Int. Cl. F42b *3/08*
U.S. Cl. 102—24 HC 9 Claims



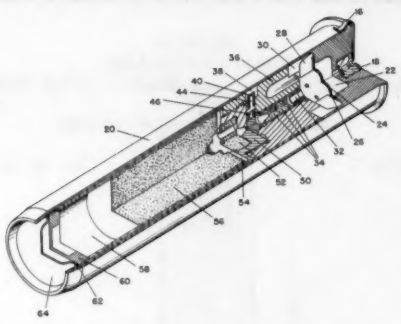
An explosive charge separated from an annular propagation charge by a conical inert element so as to form an annular ignition gap between the propagation charge and the explosive charge, the annular ignition gap having a width of only 1–5 mm.

3,736,876
CATALYST GENERATOR

Steven M. Little, China Lake; John H. Lyons; Ronald C. Noles, both of Ridgecrest; Pierre St. Amand, China Lake, all of Calif.; Donald R. Hazelton, Winslow, Ind.; Duane M. Johnson, Carthage, Ind., and James J. Riester, Bloomington, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1970, Ser. No. 48,786
Int. Cl. C06d *1/00*
U.S. Cl. 102—32 3 Claims

A catalyst generator cartridge for weather modification having a spring loaded slider for moving a detonator into alignment with the ignition chain only when the pyrotechnic has been ejected from the cartridge case. If the pyrotechnic remains in the cartridge case after an ejection charge has been fired, the cartridge case prevents the slider from aligning the detonator with the ignition chain, thereby preventing the detonator from eroding through an ignition blocking device and igniting the pyrotechnic. But, if the pyrotechnic is ejected

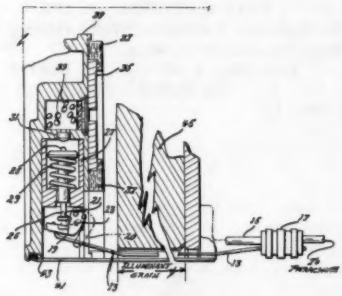


from the cartridge case, the spring is permitted to move the slider, thereby aligning the detonator with the ignition chain and allowing the pyrotechnic to be ignited. Delay compositions are included to allow the pyrotechnic to reach a predetermined distance before it is ignited.

3,736,877
IGNITION SYSTEM FOR A PARACHUTE FLARE

Henry J. Roberts, Roy; James R. Thurston, Perry, and Vern Thomas Dinsdale, Brigham City, all of Utah, assignors to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1970, Ser. No. 70,968
Int. Cl. F42b *13/38*
U.S. Cl. 102—35 3 Claims



An ignition system for air dropped illuminating flares or the like, including a cord attached to a parachute which exerts a shock force. The other end of the cord is attached to a bell crank which is rotated when the parachute opens causing a firing pin to strike a primer which ignites some pellets causing a wafer of polymer type ignition propellant to ignite. The flare illuminant is then ignited and emits the required smoke and flame signal as the flare floats downward to earth.

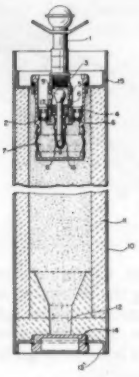
3,736,878
DEVICE FOR DESTROYING MACHINERY

Hans Guntermann, Essen-Steele, Germany, assignor to Elektro-Thermit GmbH, Essen, Germany

Filed July 14, 1971, Ser. No. 162,504
Claims priority, application Germany, July 18, 1970, P 20 35 737.3
Int. Cl. F42b *11/24*
U.S. Cl. 102—90 6 Claims

This invention relates to an improvement in a device for destroying machinery comprising a highly fire-resistant outer

casing containing an aluminothermic reaction mixture, at least one outlet opening in the casing, and igniter means in said casing. The improvement comprises ignition transmitter means connected to said igniter means and including inner casing means closed on one end, perforated inner tubing means mounted in said inner casing means, perforated annular ring



means between said inner tubing means and said inner casing means, easily meltable means covering the perforations in said inner tubing means and said annular ring means, an ignition mixture in said inner casing, and ignition rod means extending at one end into said explosive mixture and at the other end into said inner tubing means.

3,736,879

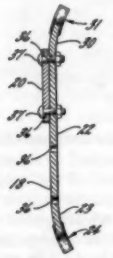
BALLAST TAMPER BLADE

James E. Anderson, Ludington, Mich., assignor to Jackson Vibrators, Inc., Ludington, Mich.

Filed May 13, 1971, Ser. No. 143,114

Int. Cl. E01b *27/16*

U.S. Cl. 104—12 **1 Claim**



A reversible tamping blade is provided for use with a railroad ballast tamping machine. The blade includes an elongated body adapted for attachment to the tamping machine. At one end of the body there is a curved shank and a tip which is notched and formed for tamping operations on a left side of a rail. Another curved shank and a tip notched and formed for tamping operations on the right side of the rail is provided at the opposite end of the blade body. By reversing the orientation of the blade, the blade may be installed for tamping operation on either side of the rail, thus providing a single replacement part for two previously required parts.

3,736,880

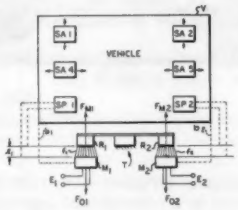
FEEDBACK CONTROL CIRCUIT FOR MAGNETIC SUSPENSION AND PROPULSION SYSTEM

James A. Ross, La Jolla, Calif., assignor to Rohr Industries Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 131,041, April 16, 1971, Pat. No. 3,638,093. This application Jan. 21, 1972, Ser. No. 219,713

Int. Cl. H02k *41/02*

U.S. Cl. 104—148 MS **37 Claims**



A linear motor uses the same magnetic flux for suspension and propulsion of a high speed tracked vehicle and operates below a support rail without physical contact therewith. Displacement and inertial sensors carried by the vehicle sense the length of the motor-to-rail gap and any acceleration of the vehicle causing changes in the gap.

A non-linear feedback circuit responds to the sensor signals and controls the voltage applied to the phased windings of the motor to maintain the selected gap. The feedback circuit provides uniform stability and dynamic response over a wide range of gap, maintains the selected gap substantially constant notwithstanding track irregularities and variations in vehicle loading, and gradually corrects for unevenness.

The inertial sensor is made to be sensitive to vertical acceleration of the vehicle and insensitive to irregularities of the rail thereby assuring a "smooth" or "easy" ride notwithstanding irregularities of the rail.

The frequency of the applied voltage is varied upwards from zero to adjust the linear speed of the motor, and the voltage is increased with the frequency to compensate for the increase in inductive reactance of the windings.

A wide dynamic range of motor control voltage is provided to cover the propulsion range from standstill to high speed without requiring a wide dynamic range in the feedback control elements.

3,736,881

STANDSTILL-POSITIONING AND RESTARTING ARRANGEMENT FOR A LINEAR INDUCTION MOTOR DRIVEN VEHICLE

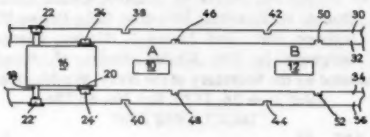
Jean-Paul Philippe Lorinet, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Feb. 8, 1972, Ser. No. 224,540

Claims priority, application France, Feb. 11, 1971, 7104704

Int. Cl. B60l *13/00*; H02k *41/02*

U.S. Cl. 104—148 LM **18 Claims**



An arrangement permitting standstill-positioning and subsequent restarting of a vehicle running on a track under the

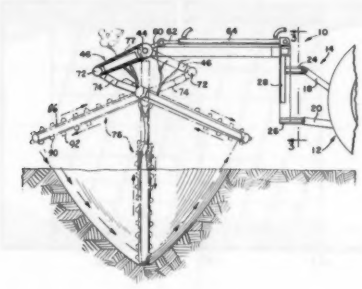
action of a linear induction motor. The track and the support members on the vehicle have cooperating projections and recesses which coincide at predetermined stop-and-go points of the track to mechanically catch the vehicle and to increase the restarting force by reducing the distance between the magnetic field and armature structures of the motor.

3,736,882

TRANSPLANTER USING PIVOTAL CUTTER CHAINS

Kermit Quinten Stephenson, State College, Pa., assignor to Research Corporation, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,084
Int. Cl. A01g *23/02*
U.S. Cl. 101—2 R **9 Claims**



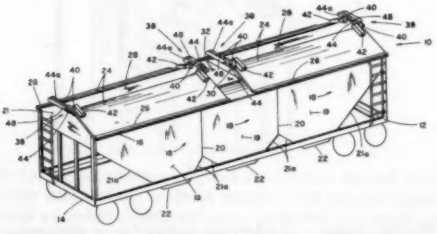
A machine for digging balled plant material has a pair of complementally inclined endless chain carrying booms with each boom being bodily supported at its upper end for pivotal and swivel self-aligning cutting movement by a vertically orientated linkage that is power actuated by a hydraulic ram in opening and closing movements and controlled in its articulating movements by a timing chain. Each linkage has an upper link pivotally mounted on a leg of a plant straddling frame which is adjustably carried by the hitch of a tractor and a lower link having an inturned end carrying a boom with the booms being relatively inturned. The booms are each provided with a chain carrying cutters and shovels and the booms are swung curvilinearly in complemental unison from inturned forward positions to inturned rearward positions in respect to the frame and a plant material to be balled.

3,736,883

DUAL OPENING ROOF ARRANGEMENT FOR COVERED HOPPER CARS

Tung H. Yang, Munster, Ind., and Theodore A. Branson, Harbert, Mich., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 20, 1971, Ser. No. 135,670
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 **5 Claims**



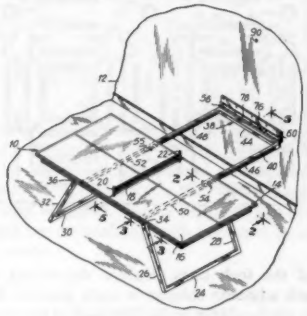
A railway hopper car roof structure including roof hatch covers pivotally attached to the roof central portion and interconnected by a linkage mechanism to permit simultaneous upward and inward rotation of the hatch covers when a lifting force is applied to but one of the covers. In the open position the covers form an inverted V on top of the hopper car and in this manner aid in directing lading through the hatches.

3,736,884

COLLAPSIBLE TABLE

Michael R. Kohner, 12 Rhoda Terrace, Parsippany-Troy Hills, N.J.

Filed Sept. 9, 1971, Ser. No. 179,085
Int. Cl. A49c *31/00*
U.S. Cl. 108—48 **4 Claims**



This is a collapsible table tennis structure having a top playing surface and a decorative undersurface. The table consists of a frame positioned adjacent to the outer edge of the undersurface of the table when the table is closed. The frame includes four legs wherein one end of each leg is hinged to the table so as to enable the other end of each leg to swing away from the undersurface of the table when the table is being opened until the legs are so situated as to support the table in the horizontal position. Means are provided for transferring the table from the horizontal to the vertical position when closing the table, and from the vertical to the horizontal position when opening the table. Means coupled to the transferring means are provided for moving the table toward the wall when closing the table, and away from the wall when opening the table. Additional means coupled to the transferring means are provided for supporting the table against the wall, and still further means are provided for holding the table against the wall in the vertical position whereby the table is stored against the wall when not being used.

3,736,885

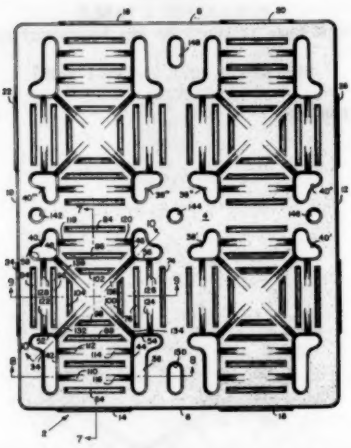
PALLET

James R. Freund, Warminster, Pa., assignor to Pennsylvania Pacific Corporation, Warminster, Pa.

Filed Apr. 27, 1972, Ser. No. 248,037
Int. Cl. B05d *19/38*
U.S. Cl. 108—58 **1 Claim**

A pallet adapted to be handled by a fork lift truck has an upper and a lower deck connected by side walls each having a pair of spaced openings for fork tines with the openings in opposite side walls being in alignment and each quarter of the pallet having a pair of said openings. Using imaginary planes perpendicular to the decks and bisecting the sides to divide the pallet into quarters, each quarter of the pallet has four hollow generally L-shaped columns disposed generally at the four corners of a rectangle with three of the colums being adjacent

the sides of openings in the side walls and one being located adjacent the center of the pallet. One side of each column is generally aligned with the side of one opening in said quarter and a second side of each column is generally aligned with a side of the other opening in the same quarter to provide for



guidance of the fork tines. Hollow depending ribs extend between each adjacent column in each quarter. Arcuate ribs extend from each column in the direction of the diagonally opposed column in said quarter. At least one arcuate rib parallel to the pallet side walls extends from each column in the direction of each adjacent column in each quarter.

3,736,886

METHOD OF AND APPARATUS FOR THE COMBUSTION OF SLUDGE

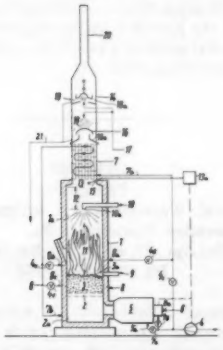
Richard Menigat, 6051 Dietzenbach, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main, Germany

Filed July 19, 1971, Ser. No. 163,905

Claims priority, application Germany, July 29, 1970, P 20 37 560.4

Int. Cl. F23g *5/00*

U.S. Cl. 110—7 R **10 Claims**



A method of and an apparatus for the combustion of sludge wherein the sludge is caused to fall freely through a fluidized-bed chamber from above through at least a sufficient distance to permit volatile components to be released by the cascading sludge and afterburning of these volatile components. The exhaust gases are removed at least three meters above the sludge inlet to the chamber.

3,736,887

ROTARY DRUM FURNACE

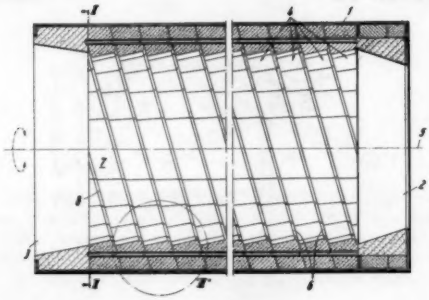
Wolfgang Wiedermann, Immenweg 19, 2092 Horst Post Maschen, Germany

Filed May 5, 1971, Ser. No. 141,061

Claims priority, application Germany, May 6, 1970, P 20 22 126.5; Aug. 5, 1970, P 20 38 896.9

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **12 Claims**



A drum-shaped casing has spaced axial ends provided with inlets and outlets, respectively, and is rotatable about a longitudinal axis which intersects both of these ends. A lining in the interior of the casing is composed of a plurality of axially arrayed annuli of refractory material each of which has a general plane inclined to the longitudinal axis of rotation. Between consecutive annuli radially inward steps are provided which extend circumferentially over most of the circumference of the lining and each of which is bounded by at least two circumferentially extending axially consecutive surface portions which are mutually inclined.

3,736,888

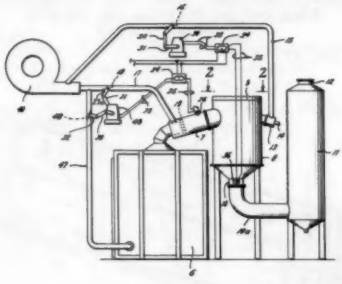
SMOKE AND FUMES ABATEMENT APPARATUS

George F. Lomax, Waco, Tex., assignor to Fred E. Mosley, Waco, Tex.

Filed July 29, 1971, Ser. No. 167,210

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 A **15 Claims**



Smoke, fumes, and odors are reduced in or eliminated from combustion products from a burn box, incinerator, or furnace by being directed through an exhaust duct to a secondary burner chamber wherein the exhaust products are caused to spiral in one direction along the wall of the secondary burner chamber in a vortex, thence are reversed and directed in the

opposite direction through the center of the vortex before being discharged to a scrubber for further treatment or directly to the exhaust stack. Air is added to the primary burning box and to the mentioned exhaust duct in accordance with the temperature of the gases in the duct while the temperature of the secondary burner chamber is controlled, further, in accordance with the temperature of gases emerging therefrom.

3,736,889

METHODS FOR TRANSPLANTING PLANTS AND TREES

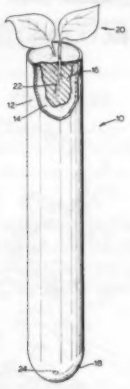
Sidney G. Reid, Oakville, Ontario, Canada, assignor to Ontario Research Foundation, Sheridan Park, Ontario, Canada

Filed Apr. 9, 1971, Ser. No. 132,909

Claims priority, application Great Britain, Apr. 14, 1970, 17,670/70

Int. Cl. A01g *9/02*

U.S. Cl. 111—1 **9 Claims**



A method for transplanting plants or trees growing in soil or the like in a container involves the use of a container fabricated of prestressed glass, the embedding of the container in soil or the like and then fracturing of the container at a point to cause the container to break up into many small pieces.

3,736,890

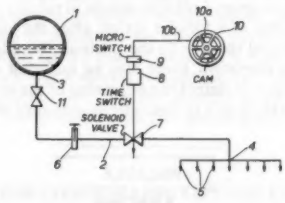
METER

Edward Barnes, 7, Dene Way, Speldhurst, England

Continuation of Ser. No. 822,791, April 2, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,032

Int. Cl. A01c *23/02*

U.S. Cl. 111—7 **5 Claims**



A device for delivering anhydrous ammonia to the soil so as to provide substantially uniform treatment of the soil which comprises a conduit or delivery pipe connected to a supply of anhydrous liquid ammonia through a valve which is opened for a set pre-determined period of time by a time switch. Means are provided for actuating the time switch at times spaced in proportion to the rate of movement of the apparatus over the soil.

3,736,891

CONNECTING RODS IN COMBINATION WITH A TUFTING MACHINE

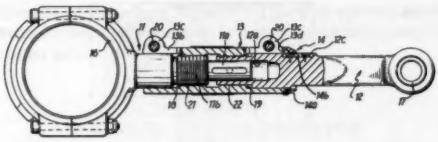
Ronald Parsons, Rishton, Blackburn, England, assignor to The Singer Company (U.K.) Limited, London, England

Filed Aug. 12, 1971, Ser. No. 171,048

Claims priority, application Great Britain, Aug. 22, 1970, 40,558/70

Int. Cl. D05c *15/20*

U.S. Cl. 112—79 R **4 Claims**



A connecting rod for transmitting a drive to a looper or knife shaft of a tufting machine includes an adjustment means for varying the effective length thereof, the adjustment means comprising a turn-buckle in screw-threaded engagement with and connecting together axially aligned rod-parts and a locking means for maintaining such rod-parts in an adjusted relative disposition.

3,736,892

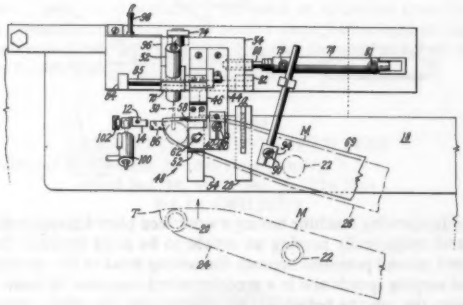
AUTOMATIC HEMMING MACHINES

Richard W. Gray, Marblehead, Mass., assignor to USM Corporation, Flemington, N.J.

Filed July 30, 1971, Ser. No. 167,690

Int. Cl. D05b *35/02*

U.S. Cl. 112—141 **8 Claims**



A system is provided for enabling a sewing machine to fold and secure edge portions of successive work pieces uniformly. More specifically, automatic mechanism is provided for the hemming of shirt collar bands and the like, each collar band being introduced and appropriately registered and controlled with respect to operating instrumentalities to enable the hemming to be precisely executed from one extremity of a collar band tip to the other whereupon the sewing thread is severed. The mechanism is particularly well adapted to cooperate cylically in the coordinating of an automatic fabric feeder and the sewing machine.

3,736,893

SEAM CONNECTION AND METHOD FOR MANUFACTURING THE SEAM

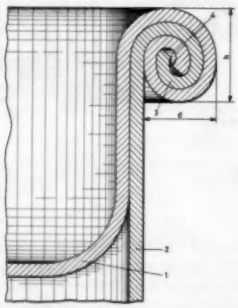
Matheus J. M. Coppens, Heide-Kalmthout, Belgium, and Heinrich J. Steen, Roosendaal, Netherlands, assignors to Koninklijke Emballage Industrie Van Leer N.V.

Filed July 27, 1970, Ser. No. 58,619

Claims priority, application Netherlands, Aug. 1, 1969, 6911769

Int. Cl. B21d *51/00*

U.S. Cl. 113—120 Y **4 Claims**



This application involves a method of forming spiral sheet metal seams of the type that are required between the side walls and ends of a steel drum. The seam is made in a spiral having a seal in its heart. The sheets which define the spiral are in mutual contact for the full length of at least one of them.

3,736,894

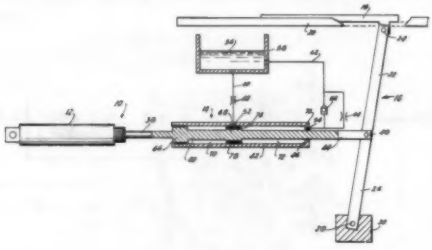
WORK FEED CONTROL

Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Filed Nov. 3, 1971, Ser. No. 195,240

Int. Cl. D05b *27/00*

U.S. Cl. 112—203 **14 Claims**



In a sewing machine having a work feed plate for supporting and reciprocally moving an article to be sewn between first and second positions beneath the sewing head of the machine at varying speeds and in a predetermined sequence in order to vary the spacing between stitches sewn into the article, means is provided for reciprocating the plate in accordance with the predetermined sequence, which means includes a double acting hydraulic ram or air cylinder applying a uniform pressure to the plate to move it between its first and second positions and means for variably resisting movement of the plate in accordance with the predetermined sequence to vary the speed of movement of the plate from its first to its second position. The resisting means includes a hydraulic control cylinder having at least two ports therein, a fluid reservoir in communication with the cylinder through the ports and a plunger in the cylinder operatively connected to the plate and cooperating with fluid in the cylinder to resist movement of the plate. The plunger initially returns fluid in the cylinder to the reservoir through only one of the ports, then through both ports and finally through only one port so that movement of the plate is variably resisted and the plate is moved faster between the first and second position when fluid is returned to the reservoir through both of the ports than when fluid is returned to the reservoir through only one of the ports.

3,736,895

GUIDING APPARATUS FOR A STITCHING MACHINE

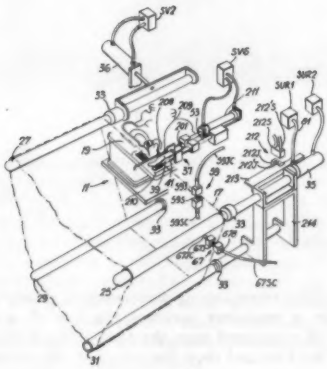
Trevor Alfred Farrar, Ravenshead, Nottingham; David George Hodson, Sherwood, Nottingham, and Derek Peat, Aspley, Nottingham, all of England, assignors to National Research Development Corporation, London, England

Filed June 17, 1971, Ser. No. 154,137

Claims priority, application Great Britain, June 18, 1970, 29,640/70

Int. Cl. D05b *27/00*

U.S. Cl. 112—203 **19 Claims**



Apparatus for guiding an edge portion of an article through a stitching machine has supports for supporting the article and sensor means such as a fluid jet and sensor interrupted by the edge of the cloth. The sensor means provides a sewing guidance signal indicative of the position of the edge of the article to be stitched and means responsive to the sewing guidance signal move one or more of the supports to guide the said edge towards the said predetermined position. Preferably the supports support a tubular article in tubular form. In cases where the edge of a tubular article after the stitching operation is displaced relative to the position the edge had before the stitching operation, there may be included seam detector means arranged to detect the beginning of the stitched edge of the tubular article and to discontinue guidance of the edge.

3,736,896

METHOD AND APPARATUS FOR SEPARATING END PORTIONS FROM METAL CANS

Harry B. Osborn, Jr., and John H. Maxim, both of Cleveland, Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

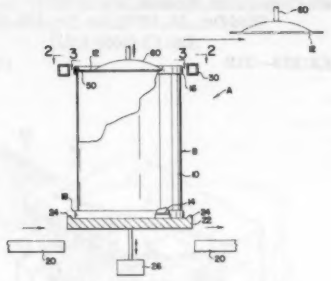
Filed May 23, 1972, Ser. No. 256,154

Int. Cl. B23p *7/00*

U.S. Cl. 113—1 K **10 Claims**

A method and apparatus for separating the end portions, or

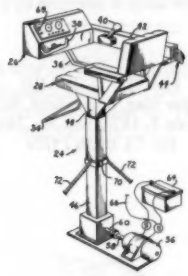
lids from a metal can including a cylindrical steel body portion and aluminum end portions wherein the aluminum end portions are melted adjacent the periphery of the body portion to allow separation from the can.



ERRATUM

For Class 113—120 see:
Patent No. 3,736,893

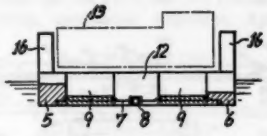
3,736,897
ELEVATING SKIPPER CHAIR FOR BOATS
Kenneth W. Krutz, 498 Uppermill Heights, Salina, Kans.
Filed Mar. 24, 1971, Ser. No. 127,581
Int. Cl. B63b *17/00, 29/04*
U.S. Cl. 114—0.5 **4 Claims**



A control station for a motor boat is constructed to permit operation of the boat from either a deck-side location or a flying bridge using a single set of controls and control panel. The controls and control panel are rigidly secured to an operator's chair which is supported by a lifting mechanism. When the lifting mechanism is activated, the control panel, controls and operator's chair are all moved between a first position adjacent the deck and a second position at the flying bridge. A flexible umbilical cord assures uninterrupted connection between the control station and the operating mechanism.

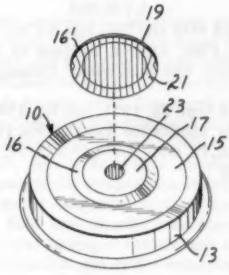
3,736,898
DEVICE FOR CONTROLLING LIST AND LEVEL OF PONTOON
Ietoshi Yamura, Nerimaku, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Nov. 18, 1970, Ser. No. 90,713
Int. Cl. B63c *1/02*
U.S. Cl. 114—45 **2 Claims**

For a floating dry dock comprising a plurality of pontoons which are interconnected, means for leveling each pontoon. The apparatus has two interconnected systems, one of which corrects the list or inclination of the pontoon and the other of which controls the depth of flotation. Each pontoon has a vertical pipe with a float in it which is responsive to the depth of flotation which operates an indicator for the second system.



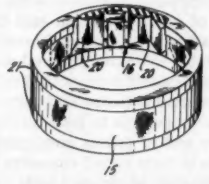
Automatic controls may be provided for both systems and the systems for each pontoon may be coupled with the systems for the other pontoons in the dry dock.

3,736,899
PRESSURE CHANGE INDICATOR
Wendell J. Manske, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Oct. 28, 1971, Ser. No. 193,350
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **11 Claims**



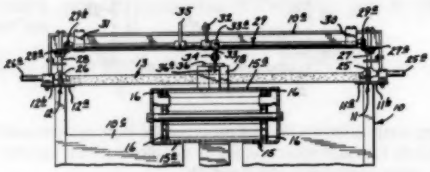
The disclosed closure device for a hermetically sealable container has a flexible panel which is drawn inward in response to a vacuum within the container, and which pops outward when pressure in the container is restored; the outward movement of the flexible panel is made very dramatic by virtue of a contrasting color appearing on the top of the closure. The color is preferably provided by reflection from the flexible panel. The reflection occurs when visible light strikes the colored undersurface of a disc-like member attached to the flexible panel.

3,736,900
CARBURETOR AIR INTAKE FILTERS
Raymond M. Nowicki, 30 Linn Road, Nutley, N.J.
Filed Jan. 10, 1972, Ser. No. 216,365
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **1 Claim**



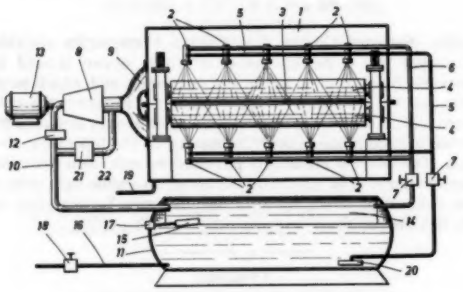
An annular pleated filter element with a vibrating-reed warning device clamping ends of the filter paper and being bonded to end gaskets.

3,736,901
TILE GROOVING AND PAINTING MACHINE
Lawrence A. Aspenson, 2150 Sunrise Drive, La Crosse, Wis.
Filed June 4, 1971, Ser. No. 150,022
Int. Cl. B05c 7/00, 11/02
U.S. Cl. 118—2 4 Claims



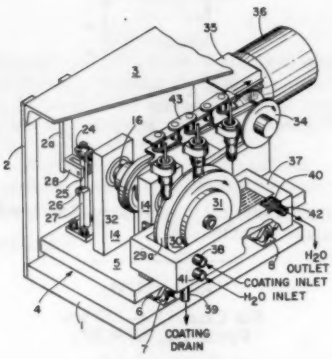
Apparatus for grooving and painting the edges of ceiling tiles is disclosed. The tiles are conveyed past a first station where routers are mounted to form the grooves. The grooved tiles are then conveyed past a second station where a stream of paint is applied to each groove. Finally, the tiles move past a third station where a wheel-like paint roller smooths out the paint in each groove.

3,736,902
APPARATUS FOR OILING SHEET METAL STOCK
Stefan Glanzer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Sept. 28, 1971, Ser. No. 184,489
Claims priority, application Austria, Oct. 19, 1970, 9378
Int. Cl. B05c 5/00, 11/115, 11/16
U.S. Cl. 118—50 6 Claims



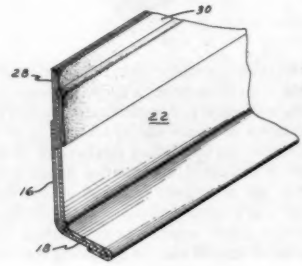
Chamber-defining means define a chamber, a sealing inlet to said chamber and a sealing outlet from said chamber. Stock-feeding means are operable to feed sheet metal stock through said inlet, chamber, and outlet along a predetermined path. A plurality of nozzles open in said chamber and are spaced apart transversely to said path and directed toward said path and operable to discharge an oil-air mixture toward said path. A suction conduit is connected to said chamber. A compressor is connected between said suction conduit and a closed container and operable to such surplus oil-air mixture from said chamber and to deliver compressed air and oil to said container so as to form in said container a body of oil and a body of compressed air above said body of oil. An oil conduit is connected to said nozzles and to said container to communicate with said body of oil. A compressed air conduit is connected to said nozzles and to said container to communicate with said body of compressed air.

3,736,903
COATING APPLICATOR ARRANGEMENT
Bruce A. Townsend, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 21, 1970, Ser. No. 100,215
Int. Cl. B05c 1/02
U.S. Cl. 118—218 3 Claims



A coating device for coating generally cylindrical articles such as tampons. The device includes a pair of discs rotatable through a bath of coating material in a direction to present the discs with coating material spread thereon to a line of continuously advancing rotatably supported tampons. The tampons engage and pass between inner faces of the discs. The lubricant is one which aids tampon insertion by a user.

3,736,904
PAINTING GUARD
Alvin P. Kus, 43 Better Way, Springfield, Mass.
Filed July 3, 1972, Ser. No. 268,867
Int. Cl. B05b 15/04
U.S. Cl. 118—505 6 Claims

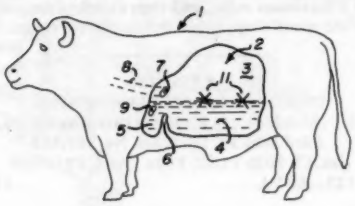


A painting guard for masking a wall portion while painting an adjacent portion. The painting guard comprises two interfitting L-shaped members wherein the outer L-shaped member has a vertical section which substantially overlaps the vertical member of the inner L-shaped member. The painting guard is used in association with two strips of masking tape or the like, wherein the first strip is positioned partially on the vertical section of the inner L-shaped member between the two L-shaped members, and the second strip is positioned on the vertical section of the outer L-shaped member and in partial contact with the first strip.

3,736,905
ARTIFICIAL RUMEN STIMULATOR AND METHOD OF ADMINISTERING SAME

Parviz Kamangar, 11740 Berrysessa Road, San Jose, Calif.

Filed Aug. 2, 1971, Ser. No. 168,336
Int. Cl. A01k 67/00
U.S. Cl. 119—51 17 Claims

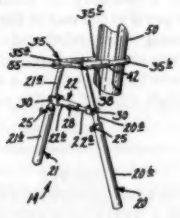


The inside wall of the rumen of a ruminant is artificially stimulated for increasing the production of saliva to allow more rapid processing of a relatively greater volume of food. The artificial stimulator comprises a compressible or collapsible resilient structure having a plurality of outwardly directed fingers or prongs for massaging the inside wall of the rumen. The stimulator structure is collapsed and inserted within a retaining tube for oral administration to the ruminant. Once inside the rumen the fluids therein attack the restraining tube to release the stimulator which then expands due to its own resilience to a size sufficiently large to be retained within the rumen for the remaining life of the ruminant.

3,736,906
ANIMAL TAIL HOLDER

Wallace Peterson, Route 2, Boyceville, Wis.

Filed Oct. 8, 1971, Ser. No. 187,683
Int. Cl. A01k 13/00
U.S. Cl. 119—105 6 Claims

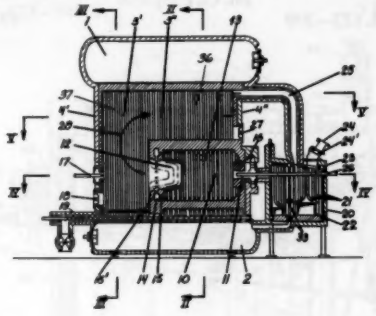


Apparatus for retaining the tail of an animal (e.g. a cow) in an upright forward position so as to render the hind legs of the cow generally immovable. The apparatus includes a generally A-shaped frame having adjustable legs attached to an upper frame portion and which are positionable on the rump of a cow. A channel member suitable for receiving the tail of a cow therein is attached to the upper frame portion in a spaced, rearward relationship therewith. The A-shaped frame and the attached channel member are retained in a generally upright position by an adjustable length chain which is attached to the holder frame and secured to an immovable object (e.g. a stanchion).

3,736,907
STEAM GENERATOR HAVING AT LEAST ONE COMBUSTION CHAMBER FOR BURNING SOLID, LIQUID AND/OR GASEOUS FUELS

Jacobo Agrest, Avda Belgrano 355, Buenos Aires, Argentina

Filed Apr. 16, 1971, Ser. No. 134,745
Claims priority, application Argentina, Apr. 20, 1970, 228173
Int. Cl. F22b 31/00
U.S. Cl. 122—2 5 Claims

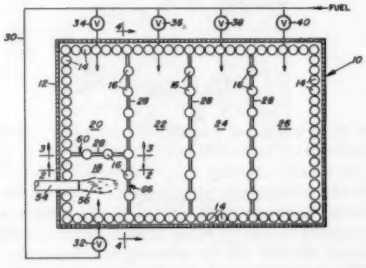


Steam generator includes a watertube boiler having an upper and lower drum, a plurality of steam tubes extending between the drums and surrounding and defining a forward and rearward radiation chamber, and means for alternately and simultaneously burning solid, liquid and gaseous fuels for heating the boiler comprising a cylindrical tornado-flow combustion chamber disposed in a lower region of the boiler at an axial end thereof, the tornado-flow combustion chamber being lined with part of the steam tubes defining the radiation chambers and having tangential nozzles for feeding combustion air and fluid fuel thereto, the tornado-flow combustion chamber also having a burner and a conically outwardly flaring combustion gas outlet extending into the forward radiation chamber located at an axial end thereof, solid particulate fuel-burning additional combustion chamber lined with water tubes and located outside the boiler and adjacent the tornado-flow combustion chamber, the additional combustion chamber having a combustion gas line extending from the top thereof and communicating with the radiation chambers and further having a gas outlet communicating with the tornado-flow combustion chamber burner.

3,736,908
SYSTEM FOR STARTING A FLUIDIZED BED BOILER

Shelton Ehrlich, Bowie, Md.; John W. Bishop, Alexandria, Va., and Ernest B. Robison, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 8, 1971, Ser. No. 189,471
Int. Cl. F22b 1/00
U.S. Cl. 122—4 D 12 Claims



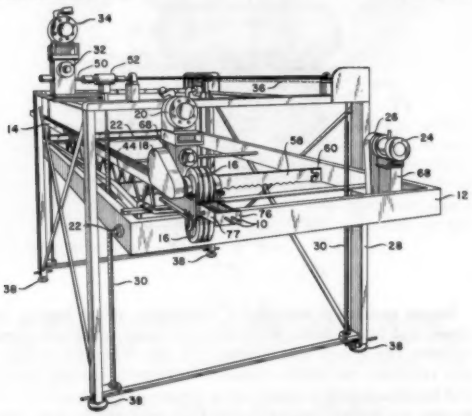
Vertical barriers divide a large fluidized bed boiler into smaller regions. During starting, openings in the barriers con-

trol mixing of the bed particles without mechanical intervention.

3,736,909
RODDING DEVICE

Elvino Marangoni, Martinez, and Douglass G. Webb, Jr., Walnut Creek, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1971, Ser. No. 184,138
Int. Cl. F23j *3/00*
U.S. Cl. 122—390 **10 Claims**

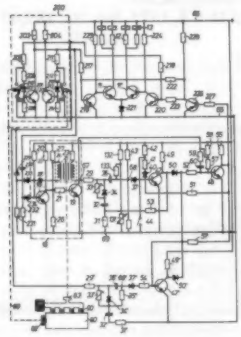


An apparatus for cleaning the interior surface of tubes in a bank of tubes such as heat exchanger or furnace tubes, which includes a frame carrying a vertically adjustable carriage, the carriage provided with a horizontally adjustable means for supporting a fluid-carrying rod and a motor driven means for inserting and retracting the rod into the tubes, the motor driven means being positioned closely adjacent to a vertical boundary of the carriage to enable it to force the rod into a tube without buckling of the rod, and the process for employing the rodding device.

3,736,910
CONTROL CIRCUIT FOR CONTROLLING A FUEL INJECTING SYSTEM

Lothar Raff, 7141 Hochberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed July 13, 1971, Ser. No. 165,797
Claims priority, application Germany, July 14, 1970, P 20 34 764.2
Int. Cl. F02d *31/00*; F02b *3/00*
U.S. Cl. 123—32 EA **15 Claims**

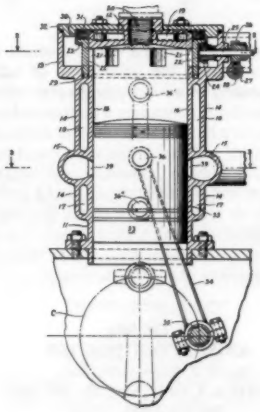


A control arrangement in internal combustion engines for controlling a group of electromagnetically actuated injection valves simultaneously. A monostable multivibrator provides pulses synchronously with the rotational speed of the engine for the purpose of determining the opening duration of the injection valves as a function of at least one operating parameter, particularly the intake manifold pressure. A first electronic circuit operable only when the throttle valve is closed, inhibits the pulses when the engine is above an upper limit, and switches the pulses back on when the engine speed is below a lower limit which is above the idling speed. A second electronic circuit which is operable at all positions of the throttle, serves to switch off the pulses when the engine speed is above a maximum value, and then switches the pulses back on when the speed drops below this maximum value.

3,736,911
INTERNAL COMBUSTION ENGINE

Frederick C. Melchlor, 258 Riverside Drive, New York, N.Y.

Filed June 28, 1971, Ser. No. 157,172
Int. Cl. F02b *75/02*; F02d *39/04*; F01l *7/00*
U.S. Cl. 123—65 VA **11 Claims**



An internal combustion piston type two-cycle, compression ignition engine having its cylinder walls provided with a plurality of substantially tangentially disposed spaced exhaust ports which are opened by the piston near the end of each power stroke, and a plurality of substantially tangentially disposed air intake ports at the end of the compression stroke, said intake ports being surrounded and controlled by a rotating sleeve having slots shaped and spaced to match the said intake ports, said sleeve being rotated at a speed equal to that of the engine crankshaft divided by the number of the intake ports therein.

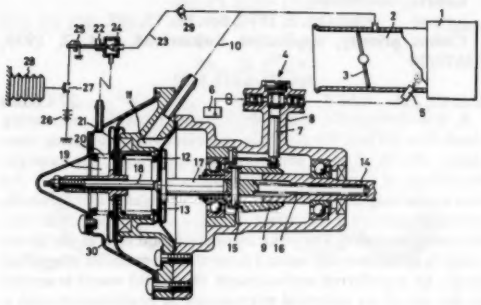
3,736,912
APPARATUS FOR COMPENSATION OF THE OPERATION OF A NEGATIVE PRESSURE CONTROL TYPE FUEL INJECTION APPARATUS

Takao Okura, Iruma-gun, Saita-ken; Kiyoshi Miyaki, Asakashi, Saitama-ken, and Sakuji Arai, Kitaadachi-gun, Saitama-ken, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,298
Int. Cl. F02d *1/06*; F02m *51/00*
U.S. Cl. 123—140 MP **9 Claims**

An apparatus of the type in which the amount of fuel injected to an internal combustion engine is controlled by a control member arranged to be moved with a front wall urged forwardly by a return spring and rearwardly by negative pressure in a negative pressure chamber connected to an air intake passage of the internal combustion engine. A second negative pressure chamber is provided behind the foregoing negative

pressure chamber and the foregoing return spring is supported by a second front wall, which is urged forward by a second return spring in the second negative pressure chamber, the in-



terior of the second negative pressure chamber being selectively connected to the atmosphere and the air intake passage of the engine through a change-over valve.

3,736,913

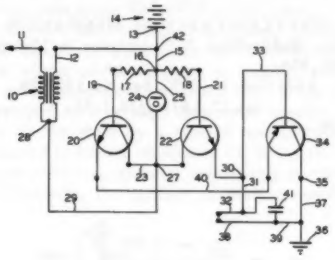
INDUCTOR CURRENT RELAY SWITCH

Peter G. Crisafulli, Sr., 1438 France Lane, Plainfield, N.J.

Filed June 8, 1971, Ser. No. 150,959

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **3 Claims**



An inductor relay switch ignition system for an internal combustion engine having a vehicular electrical system incorporating an ignition coil, a battery and a pair of intermittently-opened breaker points, includes a lead connecting the positive terminal of the coil with the battery, a neon lamp connected by a lead to the battery on one side and to the negative coil terminal on the other side, a resistance connected at the battery side of the lamp on one end, an NPN transistor connected at its base terminal to the other end of the resistance, a second resistance connected at the battery side of the lamp on one end and a second NPN transistor connected at its base terminal to the other end of the latter resistance. A common lead connects the collector terminals of both NPN transistors with the other side of the lamp. Also, a PNP transistor has a lead connecting its base terminal with the emitter terminal of one of the NPN transistors, a lead connecting its emitter terminal with the emitter terminal of the other NPN transistor, and a lead from its collector terminal is connected to ground. The lead connecting the base PNP transistor terminal with the NPN transistor emitter terminal also is connected to one of the breaker points. Finally, the second breaker point is connected with the ground lead.

3,736,914

ELECTRONIC IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

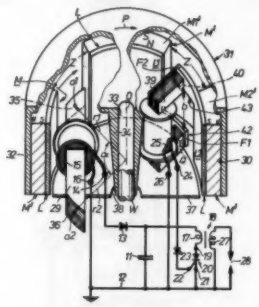
Peter Schmaldienst, Nurnberg, and Gunter Brand, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 7, 1971, Ser. No. 160,413

Claims priority, application Germany, July 7, 1970, P 20 33 484.3

Int. Cl. F02d *1/00*

U.S. Cl. 123—148 E **7 Claims**



A plurality of magnets rotated by the engine induces an alternating current voltage in a winding for charging the ignition capacitor, the discharge of the capacitor being controlled by a thyristor of which the control electrode is connected to a winding in which is induced, one each complete rotation of the magnets, a control voltage. Two neighboring magnets have extension pieces that cooperate with the core of the control winding to induce therein the control voltage, the remaining magnets being so positioned with respect to the core that during rotation these magnets induce no control voltage.

3,736,915

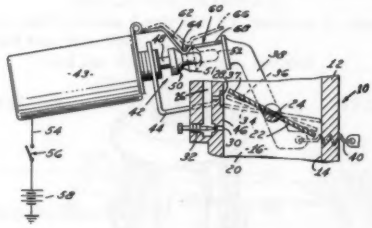
CARBURETOR EMISSION CONTROL DEVICE

William E. Dickensheets, Southfield, and Alvin P. Nowroski, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 29, 1971, Ser. No. 202,894

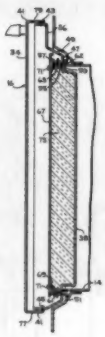
Int. Cl. F02m *3/02*; **F02b** *77/08*; **F02d** *11/08*

U.S. Cl. 123—198 DC **12 Claims**



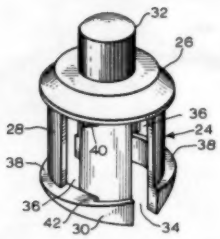
The throttle valve of a carburetor is limited in its closing movement by a mechanically and electrically controlled stop, a solenoid connected to the engine ignition circuit is energized upon engine start up to limit closing movement of the throttle valve to a normal idle speed position, engine shutdown permitting closing of the throttle valve by deenergization of the solenoid, subsequent depression of the vehicle accelerator pedal opening the throttle valve and positioning an additional stop means to prevent closing of the throttle valve beyond a fast idle position, for starting purposes.

3,736,916
SELF-CLEANING OVEN DOOR STRUCTURE
James A. White, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sept. 5, 1972, Ser. No. 286,450
Int. Cl. F23m 7/00
U.S. Cl. 126—198 5 Claims



An oven door of sheet metal construction having an outer door panel, an inner door liner and an inner panel that is adapted to be exposed to the internal oven temperatures. The inner panel is of shallow pan configuration with a peripheral flange that extends into a large opening in the inner door liner. A strip of gasket material encircles the inner panel and spaces the inner panel from the inner door liner in the manner of a thermal break. An insulation guard closes the inner panel to form a closed box-like structure that is substantially filled with thermal insulating material. A cooling air channel is located between the insulation guard and the outer door panel so that currents of cooling air may pass up through the cooling channel.

3,736,917
VENTING MEANS FOR COOKING UTENSIL
Frank E. Stepanek, La Grange Park, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Jan. 28, 1972, Ser. No. 221,625
Int. Cl. A47j 27/08, 27/092
U.S. Cl. 126—389 10 Claims

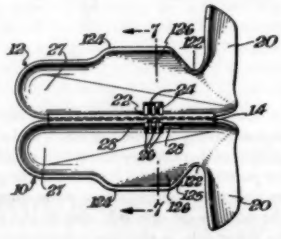


A valve for a cooking utensil has means to lock the same in an open position, in a closed position, or to allow the same to jiggle freely as an audible and visual warning signal when a predetermined vapor pressure has been reached in the utensil. The valve can be used for either "waterless" or regular cooking methods.

3,736,918
METHOD AND APPARATUS FOR IN VIVO MEASURING BLOOD VELOCITY IN CAPILLARIES
Ralf E. Mutschelknauss, Roxel; Johannes P. Schumann, Munster, both of Germany, and Manfred Bergman, Geneve, Switzerland, assignors to Institut de Recherche Woog, Geneve, Switzerland
Filed Oct. 5, 1970, Ser. No. 78,107
Claims priority, application Switzerland, Oct. 2, 1970, 14670/70
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 27 Claims

A non-destructive method and apparatus for measuring blood flow for use, for example, in objectively evaluating massaging effects on skin and mucous membranes, for example the effects of a massage of the gingiva by dental devices. An area containing a blood vessel to be investigated is intravitally sensed to provide a magnified image of the area which is continuously recorded. The velocity of the blood flow in the blood vessel is quantitatively sensed from the reproduced magnified image. In a preferred embodiment, the blood vessel is sensed by the use of an intravital microscope in combination with a split opaque illuminator to provide a magnified image of the blood vessel for recording, for example, by a videotape recorder. The recorded videotape image is reproduced on a suitable screen and the velocity of blood flow is quantitatively sensed by causing a spot of light to traverse the screen at about the same rate of the blood flow appearing on the screen. The rate of the traverse of the flying spot indicates the velocity of the blood flow. By sensing the difference in the velocity of the blood flow before and after massaging of the gingiva by a dental device, the effect of the massage may be objectively determined.

3,736,919
SPECULUM LATCHING MECHANISM
John Cotey, Haddonfield, N.J., assignor to Medspecs, Inc., Frederick, Md.
Filed Sept. 13, 1971, Ser. No. 179,929
Int. Cl. A61b 1/30, 1/32
U.S. Cl. 128—17 5 Claims

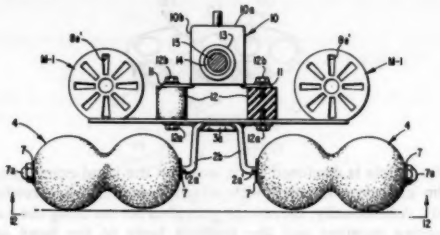


A latching mechanism is provided for a speculum. The speculum itself is formed of a stiffly flexible plastic material whereby two blade-like members are joined along one edge by a hinge which integrally connects the two blades together for pivotal movement between open and closed positions. The latching mechanism comprises interlocking, teeth-like protuberances formed integrally on the interior surfaces of the blades contiguous to the blade edges. These protuberances are interleaved such that they frictionally engage each other thereby to maintain the relative open or closed position of the blades. The tips of the engaging surfaces may have a raised pad to increase the frictional contact and yet maintain constant loading on blade pivotal movement.

3,736,920
TRAVELING MASSAGER ASSEMBLY

Kenneth R. Mathers, Fredonia Village, and Reuben T. Carlson, Jamestown, both of N.Y., assignors to Niagara Therapy Manufacturing Corporation, Brocton, N.Y.

Filed Mar. 18, 1971, Ser. No. 125,482
Int. Cl. A61h 1/00
U.S. Cl. 128—33 **26 Claims**



A traveling massager assembly adapted for association with a massage table or the backrest of a reclining chair whose body supporting cushioning features a hammock forming sheet of strong and flexible material secured at its perimeter to the cushioning framework, and a relatively thick slab of highly resilient padding having efficient vibration transmitting capabilities supported by said hammock forming sheet without framework attached springs; said cushioning operating in combination with a traveling massage carriage supported by a suspension shaft extending longitudinally of the cushioning framework along the approximate centerline of the hammock forming sheet with the ends of the shaft resiliently and adjustably suspended from the cushioning framework; the massage carriage embracing a series of resilient massage rollers positioned in rolling contact with a tough and flexible inner liner secured to the hammock forming sheet on opposite sides of the shaft, the massage rollers being resiliently supported in cantilever suspension by a roller supporting framework whose center sections are rigidly secured to a vibratory motor supporting baseplate, the carriage baseplate being connected to a carriage suspension member rockably journalled on the shaft by a pair of resilient and flexible mounts secured in spaced relation to the baseplate along the approximate centerline thereof; and driving mechanism for slowly reciprocating the carriage suspension member along the shaft.

3,736,921
FACIAL MASSAGER

Sohji Kawada, 49-6, Nakano 5-chome, Nakano-ku, Tokyo, Japan

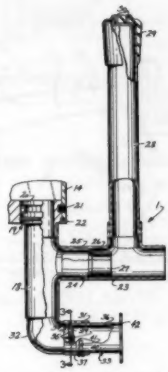
Filed Nov. 25, 1970, Ser. No. 92,687
Int. Cl. A61h 7/00
U.S. Cl. 128—56 **1 Claim**

A facial massager, wherein at the opening end of a case an elastic friction plate is mounted on a rotary shaft of a motor contained in the case and projecting fins are provided on the surface of the friction plate. A piston in a cylinder which is disposed at right angles to the case is reciprocated by a crank of the rotary shaft, and stains on the face are absorbed by the absorbing action of the piston, massaging the face with the friction plate.

3,736,922
NOZZLE ASSEMBLY FOR A HYDROTHERAPEUTIC UNIT

Richard C. Schneider, 701 N.E. 23rd Terrace, Pompano Beach, Fla.

Filed Aug. 16, 1971, Ser. No. 171,953
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **9 Claims**



A dual nozzle assembly for a hydrotherapeutic unit. The nozzle assembly includes a primary nozzle having a fixed orifice and combined with a secondary nozzle having a variable orifice. Both of the nozzles are located beneath the level of water in a tub or tank, and water under pressure is introduced into the inlet of the nozzle assembly. The water passing through the primary nozzle provides an aspirating action to draw air into the primary nozzle through a standpipe which extends above the water level. Air is mixed with the water and the aerated high pressure stream is discharged beneath the water level. By adjusting the variable orifice of the secondary nozzle, the amount of water directed through the primary nozzle can be varied to thereby vary the velocity of the water being discharged.

3,736,923
ORAL HYGIENE DEVICE

Richard Grant Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,463
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **18 Claims**

A hydraulic oral hygiene structure which produces a pulsed stream of water without employing a pump or other motor driven reciprocating device. The structure includes an elongated handle having an opening therein which leads to a race chamber which may enclose a spherical ball which is rotatable over a circular path or paths within the race chamber. A plurality of apertured nozzles are affixed to the race chamber and they are so arranged that, as the ball revolves within the chamber, water flowing through the race chamber will be

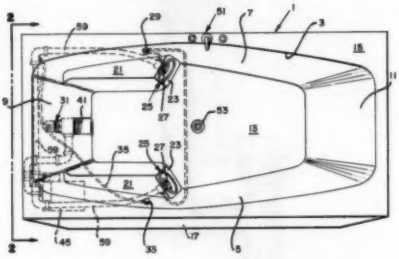
emitted through the apertures of the nozzles in a pulsed stream or streams. The nozzles are tapered and flexible so that their ends may be moved between the teeth or against the gums or both.

3,736,924

HYDROMASSAGE TUB ASSEMBLY

Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, both of Calif., assignors to Jacuzzi Research, Inc., Berkeley, Calif.

Filed Jan. 26, 1972, Ser. No. 220,813
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **6 Claims**



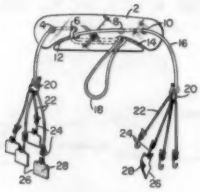
A hydromassage tub assembly involving a tub in which one end is contoured with a relatively steep end wall and associated arm rests to provide a back rest and arm supports for relaxed sitting posture, while the opposite end of the tub is contoured with an end wall of shallow slope to permit of a comfortable substantially full reclining position by an occupant of such tub. A jet assembly is installed in the end of each arm rest to provide general hydromassage action, while a jet assembly installed in the back rest end wall provides hydromassage action directly to the neck, shoulders and back while in the sitting posture.

3,736,925

FACE-LIFTING APPARATUS

Allan Erman, Los Angeles, Calif., assignor to Marce Cosmetics, Ltd., Beverly Hills, Calif.

Filed Mar. 11, 1971, Ser. No. 123,264
Int. Cl. A61f 5/08
U.S. Cl. 128—76 B **1 Claim**



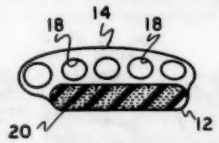
A face-lifting apparatus comprising a plate with four aligned holes and two spaced grooves, an elastic line threaded through the holes and sufficiently slack between the center holes to form an extended loop which is wedgedly positionable in the grooves, a ring at each end of the line with strings threaded therethrough and suspended therefrom, a hook at either end of each string, and adhesive tabs removably attached to the hooks.

3,736,926

HAND COVERING DEVICE

James E. Irby, Route 3, Box 145, Spartanburg, S.C.

Filed Apr. 16, 1971, Ser. No. 134,723
Int. Cl. A61f 5/37
U.S. Cl. 128—133 **13 Claims**



An article is disclosed to be worn on the hand comprising a palm covering member with which is associated a resilient body. Additionally, means are provided for securing the palm covering member and the resilient body to the hand of a wearer with the resilient body being placed adjacent the palm of the hand. The palm covering member may be integral with a glove to be worn on the hand or may be a member which is wrapped around the hand and secured thereto. In the embodiment where a glove is provided, the finger portions of the glove may be open-ended so as to permit the fingers to extend therethrough. One purpose of the device of the present invention is, when worn, to prevent an infant from picking up small articles that could prove dangerous to the infant because of sharp edges or the like on the article, or that could be placed into the mouth of the infant and prove dangerous when swallowed. As such, the resilient body used with the device of the present invention should be of sufficient size to prevent interaction between the thumb and fingers of the wearer necessary for the grasping and lifting of objects. The device of the present invention has other uses as will be elaborated on hereinafter.

3,736,927

SELF-CONTAINED AIR PURIFIER AND CONDITIONER UNIT

Fazlollah Leo Misaqi, 1407 Meadowlark Drive, Pittsburgh, Pa.

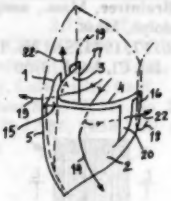
Continuation-in-part of Ser. No. 841,432, July 14, 1969, abandoned. This application May 17, 1971, Ser. No. 144,080
Int. Cl. A62b 7/00
U.S. Cl. 128—145.6 **2 Claims**

An integrated composite component, self-contained air purifier and conditioner unit for portable use by individuals. A compact battery driven air blower and protective head covering adapted for delivery of and electrically purifying and/or conditioning air to the face of a user are incorporated in the unit.

3,736,928
COLLAPSIBLE FACE MASK

Erik Arne Andersson, and Bror Axwl Erling Andersson, both of Stockholm, Sweden, assignors to Nils O. W. Rundblad, Markaryd, Sweden

Filed Mar. 15, 1971, Ser. No. 124,259
Int. Cl. A62b *23/02*
U.S. Cl. 128—146.2 1 Claim

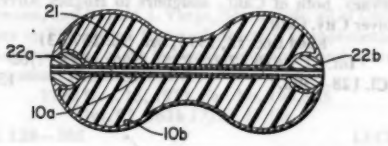


The invention is concerned with a hygienic face mask formed from a single sheet of air-filtering fibrous sheet material so folded as to provide a free space between outer and inner walls of the mask. Air flow openings are or may be provided at the rear end portion of the outer walls. The mask is held snugly against the nose and adjacent portion of the face of the wearer by means of a stiff but deformable clip member inserted in slits in the top of the mask.

3,736,929
SELF-SHAPING EARPLUGS

Allen William Mills, 11 College Avenue, Arlington, Mass.

Filed July 9, 1970, Ser. No. 53,384
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 14 Claims



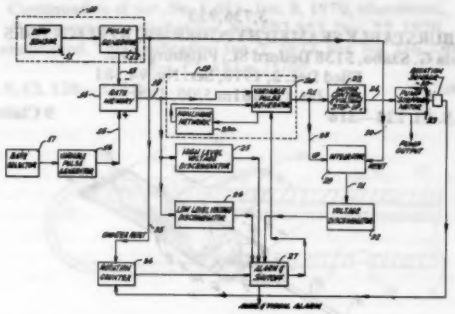
An earplug preferably having a dumbbell shape and preferably of an elastic material, a filler contained therein to attenuate audible sound but plastic enough to be deformed, and a stiffening member at the axis of the earplug to assist in inserting the earplug into the ear canal.

3,736,930
PARENTERAL ADMINISTRATION FLUID FLOW CONTROL SYSTEM

Heinz W. Georgi, La Jolla, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Apr. 14, 1970, Ser. No. 28,398
Int. Cl. A61m *5/16*
U.S. Cl. 128—214 E 25 Claims

Apparatus for parenteral administration of medical fluids, wherein a peristaltic infusion pump is automatically regulated by a digital control system to establish a fluid flow rate at any selected rate in a wide dynamic range, typically a 100 to 1 range. Measured and desired flow rates are converted to digital signals and compared, the electrical difference being used to vary a control voltage which establishes the frequency of pulses energizing a stepping motor drive for the pump. Aural and visual alarms respond to out-of-limit conditions detected by appropriate monitoring circuits in the control system.



3,736,931
CATAMENIAL NAPKIN

Jacob A. Glassman, 1680 Meridian Avenue, Miami Beach, Fla.

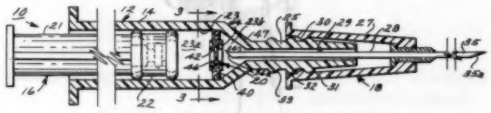
Filed June 9, 1971, Ser. No. 151,209
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R 7 Claims

A catamenial napkin having an outer non-compressed layer of fluid absorbent material and an inner core of highly compressed fluid absorbent material enclosed therein. The napkin preferably is V-shaped in cross section and is arch-shaped in its longitudinal direction by die compression. When the inner core is wetted, it swells and dynamically expands the outer non-compressed layer in all directions and thereby adjusts itself to each wearer.

3,736,932
INJECTION APPARATUS WITH FILTER

Fred E. Satchell, Chesterfield, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

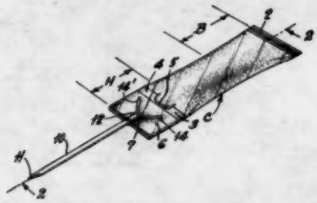
Filed Feb. 15, 1972, Ser. No. 226,615
Int. Cl. A61b *10/00*; A61m *5/00*
U.S. Cl. 128—218 R 20 Claims



A fluid medicament injection device is provided which has a housing, a chamber in the housing, a metallic filter dividing the chamber into forward and rearward portions, and a needle mounted for movement relative to the filter. In one position of the needle, it is in direct fluid communication with the forward portion of the chamber so that fluid flowing between the forward and rearward chamber portions is filtered by the filter, and in another position, the needle by-passes the forward

chamber portion and the filter, and is in direct fluid communication with the rearward chamber portion.

3,736,933
BURSTABLE SEAMED HYPODERMIC APPLICATORS
Bela G. Szabo, 5138 Delford St., Pittsburgh, Pa.
Filed Dec. 2, 1970, Ser. No. 94,381
Int. Cl. A61m *5/00, 1/00*
U.S. Cl. 128—216 **9 Claims**



Single-use hypodermic applicators are formed of single or multiple chambers containing liquid medicaments of all types. These low-cost applicators are formed from synthetic plastic tubing in flattened form with a sterile hollow needle sealed therein and projecting from the front end of the applicator body with the inner end of the needle enlarged and sealed within a chamber formed in tubing forwardly of the medicament chamber. A normally heat-sealed seam between chambers is adapted to be ruptured by finger pressure imposed on the outer walls of the medicament chamber to force the medicament from the latter into the forward chamber and through the hollow needle for ejection through the pointed end thereof when the same is inserted into a receiving body. The applicator body is formed with one, two or more medicament chambers separated by burstable seams extending in straight lines transversely of the longitudinal axis of the tubing and provided with critically dimensioned and oriented weakenings so that finger pressure applied selectively to these chambers will control the dosage of medicament forced forwardly towards the enlarged end of the hypodermic needle. The needles are designed to be packaged compactly and dispensed conveniently for use in large or limited number. Also, the only two components of the applicators, namely, the needles and the plastic medicament containers, may be salvaged and processed for re-use.

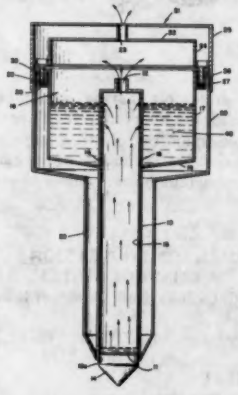
3,736,934
SURGICAL DRAINAGE APPLIANCE
Alexander J. Hennessy, 55 Essex St., Cambridge, Mass.
Continuation-in-part of Ser. No. 838,122, July 1, 1969, abandoned. This application Sept. 21, 1971, Ser. No. 182,467
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **7 Claims**

A surgical drainage appliance adapted to collect body wastes of patients who have had colostomy, ileostomy and ileum bladder operations. The appliance is positively adhered to the skin surrounding the stoma and is adapted to removably hold a disposable waste receptacle having an opening in registration with the stoma. The receptacle may be easily changed without affecting the face plate of the appliance which remains adhered to the patient without the necessity of belts and absorbent pads.

3,736,935
SURGICAL SPONGE
Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc., Rudolph, Mass.
Filed Feb. 17, 1971, Ser. No. 116,187
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **4 Claims**

A surgical sponge useful for delicate surgical procedures is made by providing a strip of nonwoven fibers which are securely bonded against delamination, and bonding a plastic retrieval thread to the surface of the strip by heat-softening a portion of the thread to cause it to flow partially into the surface of the strip. The resulting sponge may also have a band of radiopaque material bonded to its surface by heat-softening the plastic material of the band.

3,736,936
CRYOGENIC HEAT TRANSFER DEVICE
Algerd Basiulis, Redondo Beach, and Elmer E. Reed, Jr., Downey, both of Calif., assignors to Hughes Aircraft Co., Culver City, Calif.
Filed Dec. 13, 1971, Ser. No. 207,431
Int. Cl. A61b *17/36;* **F25d** *3/00;* **A01k** *11/00*
U.S. Cl. 128—303.1 **13 Claims**



Heat transfer devices especially suitable for cryosurgery are disclosed each including an elongated tubular housing of low thermal conductivity having an open end and a closed end. A conical probe member of high thermal conductivity is mounted at and extends from the closed end of the housing. A

capillary wick lining the inner lateral surface of the housing is adapted to convey a volatile working fluid such as liquid nitrogen at a temperature of −196°C from the vicinity of the open end of the housing to the vicinity of the closed end. A working fluid reservoir is disposed about the open end of the housing in fluid communication with the capillary wick. An annular evacuated chamber is provided about the outer surface of the reservoir and a substantial portion of the outer lateral surface of the housing to afford thermal insulation.

3,736,937

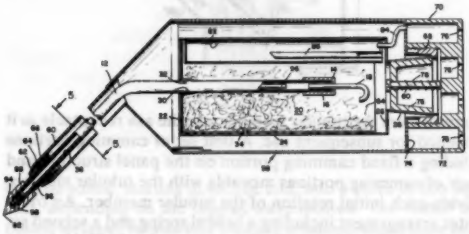
CRYOGENIC TOOL

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 8, 1972, Ser. No. 260,873

Int. Cl. A61b *17/36;* **F25d** *3/00;* **A01k** *11/00*

U.S. Cl. 128—303.1 **26 Claims**



The external surface of the working tip of the cryogenic tool is applicable to any point where cooling is desired, for example, affected tissue in cryosurgery. An inner surface of the tip is supplied with a cryogenic liquid thru a capillary active surface from a reservoir. The boiled off cryogen vapor exits from the cryogenic tool to atmosphere.

3,736,938

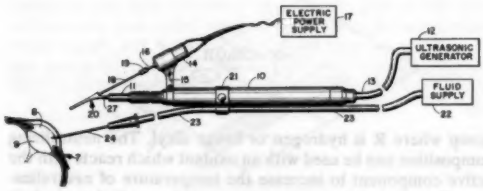
OPHTHALMIC METHOD AND APPARATUS

John C. Evvard, Strongsville; William J. McGannon, Lakewood, and Donald J. Vargo, Seven Hills, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 15, 1971, Ser. No. 198,885

Int. Cl. A61b *17/32, 17/00*

U.S. Cl. 128—305 **13 Claims**



A method and apparatus for removing material and components such as the lens from an eye is described. High speed rotary cutting members at one end of a rod macerate the lens while an annular tubing disposed around the cutting members vibrates ultrasonically to coact with the cutting members in macerating the lens. At the same time, a liquid is supplied to the chamber behind the cornea of the eye. Spiral grooves extending along the rotating rod from the cutting members evacuate the liquid and the macerated material from the eye. An alternate embodiment of the apparatus includes a tube through which liquid is supplied to the operative site of the ultrasonically vibrating tube and the cutting members in the area of the lens.

3,736,939

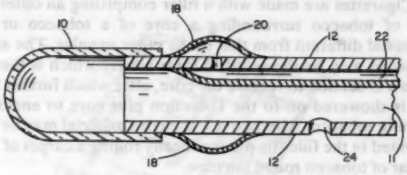
BALLOON CATHETER WITH SOLUBLE TIP

Glenn N. Taylor, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Continuation of Ser. No. 1,471, Jan. 8, 1970, abandoned, Continuation-in-part of Ser. No. 692,853, Dec. 22, 1970, abandoned. This application Jan. 7, 1972, Ser. No. 216,230

Int. Cl. A61m *25/00*

U.S. Cl. 128—349 B **1 Claim**



A flexible retention catheter of the balloon inflation type is provided with an auxiliary drainage opening in the wall of the catheter, situated below the inflation balloon, and with an imperforate tip composed of a material which is soluble in body fluids. During insertion, drainage is initiated only through the auxiliary opening. Upon dissolution of the tip, the whole diameter of the lumen of the catheter becomes available for drainage.

ERRATUM

For Class 128—418 see:
Patent No. 3,737,579

3,736,940

CIGARETTE WITH ASH-RETAINING MEANS

Joseph Saint-Pastou, 5 rue Pierre Mouren, 13-Marseille 7, Bandol, France

Continuation-in-part of Ser. No. 741,924, June 2, 1968, Pat. No. 3,632,384. This application June 24, 1971, Ser. No. 156,450

Claims priority, application France, July 18, 1967, 67114557; July 24, 1967, 67115396; Nov. 4, 1967, 6722035; Dec. 19, 1967, 6722085; Jan. 18, 1968, 6822155

Int. Cl. A24d *01/12*

U.S. Cl. 131—4 A **6 Claims**

A cigarette comprises a tubular envelope of paper impregnated with a network of intersecting narrow bands of a non-combustible material defining an array of paper areas. The paper with the impregnated network is shrunk relative to the paper areas which bulge outwardly. Upon combustion, the non-combustible material vitrifies and welds the intersections of the network lines to form a rigid network armature for supporting cigarette ash.

3,736,941
CIGARETTES AND THE LIKE

Desmond W. Molins, London, England, and Francis A. M. Labbe, Neuilly-sur-Seine, France, assignors to Molins Machine Company Limited, London, England

Filed Mar. 26, 1970, Ser. No. 22,955

Claims priority, application Great Britain, Apr. 2, 1969, 17,135/69

Int. Cl. A24c *5/18, 5/34*

U.S. Cl. 131—21 R **5 Claims**

Cigarettes are made with a filler comprising an outer annulus of tobacco surrounding a core of a tobacco or other material different from that in the outer annulus. The annulus tobacco may be showered to form a layer which is then bent into a U-section to receive the core, after which further tobacco is showered on to the U-section plus core to enclose the core in tobacco. Alternatively the core material may be incorporated in the filler by pneumatically rolling a carpet of an annular of tobacco round the core.

3,736,942
APPARATUS FOR COMMINUTING AND DRYING OF TOBACCO LEAVES

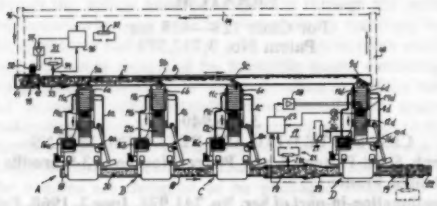
Uwe Elsner, Hamburg-Bramfeld, and Waldemar Wochnowski, Hamburg, both of Germany, assignors to Hauni-Werke Koerber & Co. KG, Hamburg, Germany

Filed May 7, 1971, Ser. No. 141,164

Claims priority, application Germany, May 11, 1970, P 20 22 816.4; Dec. 17, 1970, P 20 62 343.2

Int. Cl. A01d *55/18*

U.S. Cl. 131—22 R **12 Claims**



Several parallel tobacco comminuting machines deliver tobacco shreds onto a conveyor system which transports a stream of such shreds into a drying apparatus. The last comminuting machine is adjustable by a control system connected with a weighing device which is located upstream or downstream of the last machine and causes the control system to regulate the output of the last machine in such a way that the combined output of the machines forms a constant stream of tobacco shreds. The weighing device weighs successive increments of the tobacco stream which includes the output of all machines, the output of all but the last machine, or successive increments of a stream which is being withdrawn from a magazine serving to receive the output of all machines.

3,736,943
VEHICLE BODY ASH TRAY CIGARETTE EXTINGUISHER

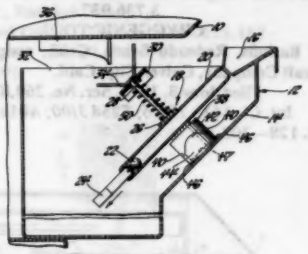
Robert D. Hodgson, Birmingham, Mich., assignor to General Morors Corporation, Detroit, Mich.

Filed Apr. 26, 1972, Ser. No. 247,738

Int. Cl. A24f *19/14*

U.S. Cl. 131—235 R **5 Claims**

An ash tray includes an ash receptacle mounted for movement between open and closed positions relative to a vehicle body occupant compartment panel structure. A tubular member is mounted on the ash receptacle for movement between a pair of horizontally inclined positions rotated end-for-end from each other to alternately expose the opposite ends of the tubular member in upwardly oriented cigarette receiving positions during successive movements of the ash receptacle to open position. A ball is received within the tubular member for captured movement between the opposite ends thereof and gravity moves the ball to the lower end of the tubular member each time it is rotated. A lit cigarette inserted into the upper end of the tubular member through a funnel-like guide mounted on the ash receptacle is thus extinguished by limited oxygen flow to its burning end. Downward ball movement also aids in expelling a previously extinguished



cigarette from the tubular member into the ash receptacle as it is opened for subsequent use. A first set of camming portions including a fixed camming portion on the panel structure and a pair of camming portions movable with the tubular member provide each initial rotation of the tubular member. An over-center arrangement including a helical spring and a second set of camming portions is moved overcenter by this initial rotational movement and thus completes the rotation of the tubular member each time the ash receptacle is opened.

3,736,944
COMPOSITIONS AND PROCEDURES FOR EFFECTING A PERMANENT WAVE OR SET IN THE HAIR

Guiliana Ghilardi, Gregoire Kalopissis, Henri Philippe De Beaulieu, and Jean-Louis Abegg, Le Perreux, all of Paris, France, assignors to Societe Anonyme dite: L'Oreal, France

Division of Ser. No. 844,645, July 24, 1969, Pat. No. 3,676,546. This application Dec. 17, 1971, Ser. No. 209,470

Int. Cl. A45d *7/04*

U.S. Cl. 132—7 **5 Claims**

A composition for use in the neutralizing stage of a permanent wave operation. The active component of the composition contains an

group where R is hydrogen or lower alkyl. The neutralizing composition can be used with an oxidant which reacts with the active component to increase the temperature of neutralization. The neutralizing composition may be applied to the hair before or after it is placed on rollers.

3,736,945
PLASTIC HAIR WAVE DEVICE AND METHOD OF WAVING HAIR

Ralph E. Kruck, Clinton, Conn., assignor to VCA Metal Fabrications Inc., Waterbury, Conn.

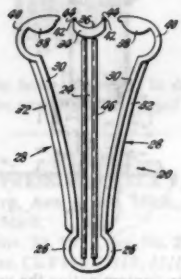
Filed Aug. 5, 1971, Ser. No. 169,274

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **11 Claims**

A "home-permanent" hair waving device involving a molded plastic multiple clip having an elongate, centrally-disposed body member and two integral, resilient side arms

coextensive with the body member and adapted to clamp against the latter. A foil-backed or faced wrapper paper can be arranged for clamping between one arm and the body. The other clip arm is adapted to clamp strands of hair against the body member, which are to be curled or waved, such clamping being carried out closely adjacent the scalp. The clamped hair strands are disposed so as to overlie the foil-backed paper, which has flaps or marginal portions that are then folded over the hair along longitudinal fold lines to provide an essentially flat, three-layer thickness or assemblage. Such assemblage can

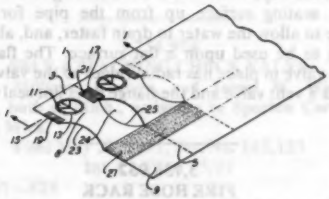


then be rolled, starting at its free end, into a more or less tight curl, depending on the type of wave desired. The folded and curled wrapper retains hair treating solutions which have been applied to the hair, and maintains the hair strands moist for a desired interval, after which the user uncoils the paper wrapper and releases the arms of the plastic clip device for removal of the same. The arms and body member of the clip device are so constituted that the entire unit can be economically molded as a single piece and in a single operation, in simple molds whereby the fabrication cost is held to a minimum.

3,736,946
APPLIANCE AND PROCESS FOR NAIL ORNAMENTATION

Stephen Yando, 315 W. 57th St., Apt. 16A, New York, N.Y., and Gloria Wagner, 225 E. 74th St., New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,370
Int. Cl. A45d *40/30*
U.S. Cl. 132—88.5 **5 Claims**

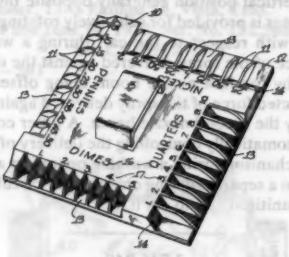


An ornamentation appliance for applying designs to human nails. A support strip adapted to overlie a human digit carries on a shiny surface thereof a planar design in weakly adherent contact. The design and adjacent shiny surface are overcoated with a transfer adhesive whereby pressure transfer of overcoating and adherent design to said nail is enabled. Adhesive bands are provided on the strip for anchoring it during the pressure transfer step. A method for use of the appliance is also set forth, wherein following transfer the design and adjacent nail are overcoated with a composition including a film-former solute in a solvent which does not substantially dissolve the material of the design.

3,736,947
COIN COUNTER OR VERIFIER

Ronald C. Gdanski, 10 Sunnylea Crescent, Grimsby, Ontario, Canada

Filed Sept. 21, 1971, Ser. No. 182,386
Claims priority, application Canada, June 25, 1971, 116692
Int. Cl. G07d *9/00*
U.S. Cl. 133—8 R **3 Claims**

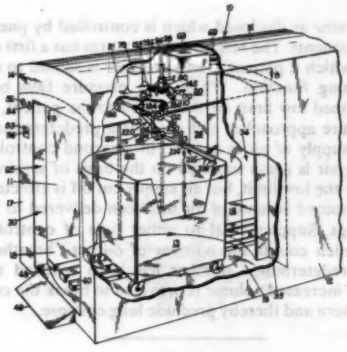


A coin counter or verifier has at least one straight edge along which are a series of regularly spaced ribs extending outwardly from the base of the counter. The ribs are sized according to the denomination of coin to be counted, operation of the counter entailing the insertion of the edge with the ribs into a trough of coins along one side thereof. The ribs force coins at regular intervals out of alignment in the trough to facilitate counting thereof.

3,736,948
WASHING AND SANITIZING APPARATUS FOR CARTS SUCH AS HOSPITAL CARTS

Bert Crosswhite, 10745 S.E. Ridgeway Drive, Portland, Oreg.

Filed July 28, 1971, Ser. No. 166,832
Int. Cl. B60s *3/04*; B08b *3/02*
U.S. Cl. 134—95 **7 Claims**



A washing apparatus especially adapted for washing and sanitizing containers such as hospital carts. The apparatus includes a washing chamber having selectively closable door openings on opposite sides thereof adapted for receiving and dishcarging carts to be washed. A track is provided on the floor of the chamber between the door openings for guiding

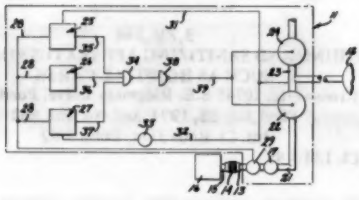
carts through the chamber. A washing mechanism is provided within the washing chamber, adapted to receive washing and sanitizing fluid from a remote source and to direct a spray of such fluid upon the carts. The washing mechanism is suspended from the ceiling of the washing chamber and includes a first nozzle boom that normally extends vertically down along the outside of a cart positioned within the chamber, and a second nozzle boom that normally extends horizontally above the cart. A washingfluid operated cylinder is provided for selectively moving or pivoting the second nozzle boom downwardly into the interior of the cart, whereby it assumes a vertical position generally opposite the first nozzle boom. A motor is provided for selectively rotating the washing mechanism with respect to the cart during a washing cycle with the force of the spray delivered against the outer surface of the cart by the first nozzle boom being offset by the oppositely directed force of the spray delivered against the inside of thecart by the second nozzle boom. A timer control is provided for automatically controlling the delivery of fluids to the washing mechanism during a washing operation and a blower is provided in a separate drying chamber for circulating hot air around the sanitized cart to dry it.

3,736,949

FLUIDIC RESPIRATOR

Charles R. Wolter, 2020 Forest View Road, Rockford, Ill., and Thomas G. Gustafson, 224 Guilford Road, Hoyt Lakes, Minn.

Filed Feb. 8, 1971, Ser. No. 113,149
Int. Cl. A62b 7/00
U.S. Cl. 137—102 **15 Claims**



A respirator as disclosed which is controlled by pneumatic logic components. The respirating apparatus has a first control mode, in which a patient's lung pressure is sensed to control the breathing function. When lung pressure falls below a predetermined low limit air is supplied to the patient, and as lung pressure approaches and exceeds a predetermined high limit, the supply of air is cut off. In a second control mode, respirating air is again supplied on the basis of sensing pressure below the low limit, but air supply cut off is effected after a predetermined volume of air has been delivered to the patient's lungs. Supplemental to either type of control is apparatus which counts the number of output "breaths," and when a predetermined number has been reached a "sigh breath" of increased volume is provided to break the constant breath pattern and thereby preclude lung collapse.

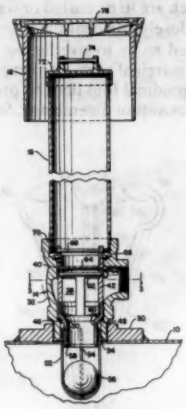
3,736,950

ANTI-CONTAMINATION VENT VALVE

Donald L. Smallwood, Fort Mitchell, Ky., assignor to Dover Corporation, New York, N.Y.

Int. Cl. F16k 1/14
U.S. Cl. 137—202 **4 Claims**

An anti-contamination vent valve for preventing fluid escape to a vent line is disclosed. The valve provides for the venting of fumes from an enclosure to a vent line under normal conditions. The valve provides a closure member for preventing excess fluid from the enclosure escaping into the vent line and thereby contaminating the vent line or other enclosures which may be connected with the common vent line.



3,736,951

MUSHROOM-SHAPED DRAIN VALVE AND METHOD OF USING THE SAME

Rufus J. Purtell, P.O. Box 1152, Brownfield, Tex.

Filed Mar. 20, 1972, Ser. No. 235,921
Int. Cl. F16k 45/00
U.S. Cl. 137—217 **8 Claims**

A mushroom-shaped drain valve for draining irrigation pipes has nibs placed around the periphery of the flat radial surface of the cap, which is the valve seating surface. The nibs hold the seating surface up from the pipe for a greater clearence to allow the water to drain faster, and, also, enables the valve to be used upon a flat surface. The flange which holds the valve in place has radial ridges so the valve may also be used as a vent valve and the flange does not seal upon venting.

3,736,952

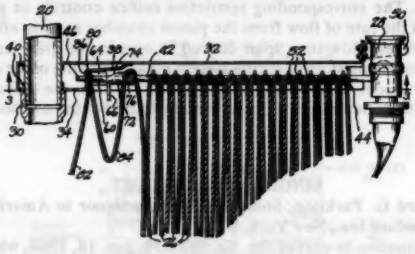
FIRE HOSE RACK

William Stanley Thompson, Elkhart, Ind., assignor to Elkhart Brass Manufacturing Co., Inc., Elkhart, Ind.

Filed Sept. 30, 1971, Ser. No. 185,218
Int. Cl. B65h 75/36
U.S. Cl. 137—355.28 **5 Claims**

A fire hose rack having an arm swiveled laterally on a vertical support and providing releasable means for supporting spaced points of a fire hose and a clamp for a portion of the hose to prevent water flow through the hose until intentionally released by a pull on the hose when released from its supports. The hose clamping action occurs at a return bend of the hose located between an abutment on the arm and a clamp bar pivoted to the arm and retained in clamping position by a rotatable retainer normally engaging the clamp bar at a sur-

face having a recess which permits release of the bar when the retainer is rotated in response to tensioning of the hose tend-

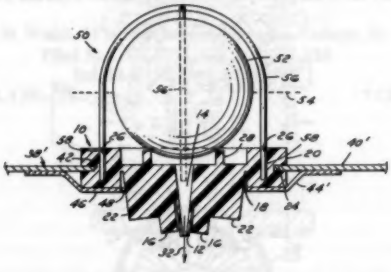


ing to straighten the hose and acting to deflect a finger projecting radially of the retainer and engaged by the hose.

3,736,953
LOW PRESSURE CHECK VALVE

Thomas T. Vaalburg, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Nov. 30, 1971, Ser. No. 203,140
Int. Cl. F16k *31/18, 15/14*
U.S. Cl. 137—430 **15 Claims**

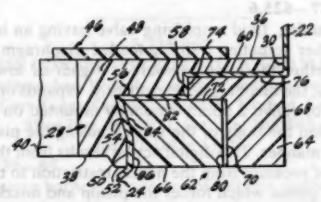


A low fluid pressure check valve with a one-piece body having a supple diaphragm with a pair of integral spaced lugs extending from one face thereof. A pair of flexible lips of an oval shaped tube which is integral with the diaphragm extend between the lugs to provide a fluid passage through the body of the valve. Displacement of the diaphragm moves the free ends of the lugs toward and away from each other to engage and disengage the lips and thereby close and open the fluid passage.

3,736,954
SELF-ATTACHING CHECK VALVE

Ronald R. Milligan, Chelsea, and James W. Widenhofer, Jackson, both of Mich., assignors to Sparton Corporation, Jackson, Mich.

Filed May 20, 1971, Ser. No. 145,133
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **2 Claims**

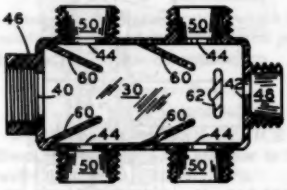


Check valve structure self-attachable to flexible sheet material, such as plastic film, wherein the check valve body is of an annular configuration having a central region through which passages are defined for fluid flow and a valve member of the flexible flap type limits flow through the passages in a single direction. The valve body includes shoulders and surfaces which cooperate with a two-piece retaining ring wherein the flexible sheet material is interposed between the shoulders and surfaces establishing a sealed interconnection between the valve body and flexible sheet.

3,736,955
IRRIGATION CONDUIT STREAM DIVIDER

Adolph Schlesser, 1145 Phillips St., Vista, Calif.

Filed June 14, 1971, Ser. No. 152,566
Int. Cl. F16l *41/00*
U.S. Cl. 137—561 **7 Claims**

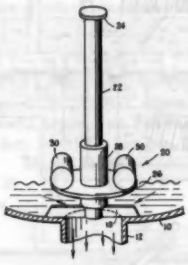


In a divider housing, baffles interposed between irrigation water source conduit and distribution conduits preventing direct flow therebetween thereby substantially equalizing flow to the distribution conduits.

3,736,956
FLOATING BAFFLE TO IMPROVE EFFICIENCY OF LIQUID TRANSFER FROM TANKS

Frank S. Howard, Indian Harbor Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 16, 1971, Ser. No. 181,023
Int. Cl. F16k *21/14, 31/18*
U.S. Cl. 137—582 **5 Claims**



A floating baffle which rides up and down on a vertical shaft over a drain in a tank as the liquid level within the tank varies. When the baffle is in the raised position the liquid is allowed to flow out of the drain at an unrestricted rate, whereas, when the baffle is in the lowered position such prevents pull-through of air or gas that is above the liquid, which would interfere and reduce the flow of liquid from the tank.

3,736,957

INJECTOR CUTTING TORCH OR A COMBINED INJECTOR WELDING AND CUTTING TORCH

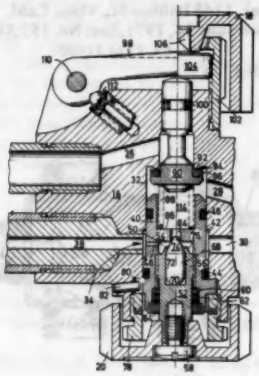
Traugott Gutermann, Ober-Roden-Waldacker, and Edmund Diehl, Frankfurt/Main, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Feb. 1, 1971, Ser. No. 111,195

Claims priority, application Germany, Feb. 26, 1970, P 20 08 971.8

Int. Cl. B23k *7/00*

U.S. Cl. 137—604 3 Claims



An injector cutting torch or combined injector welding and cutting torch has a valve for regulating the heating oxygen pressure and a mixing nozzle assembly wherein the axis of the mixing nozzle boring intersects the axis of the heating oxygen supply and wherein the mixing nozzle assembly and heating oxygen valve are formed as a common constructional unit.

3,736,958

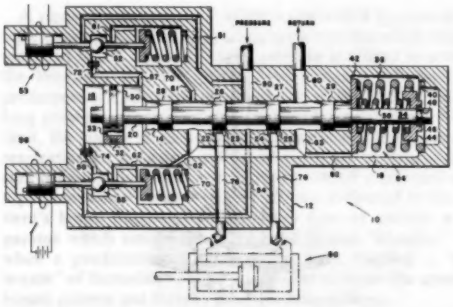
FOUR-WAY SOLENOID SELECTOR VALVE

Nels C. Rostad, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 13, 1972, Ser. No. 243,697

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.6 17 Claims



A four-way solenoid selector valve comprising a valve spool slidable in a housing bore; input, outlet and return ports communicating therewith; a chamber piston mounted on the one end of the spool, subject to fluid pressure changes on its faces to cause its axial translation in either direction; and restrictive orifices disposed in passageways communicating with the piston chamber. Solenoid actuated poppet valves close and open such passageways to the return port while ducts which communicate with the input port are connected to the poppet valves. Energization of a solenoid of one or the other of such valves provides uncovering of corresponding metering slots for the two outlet ports as a result of translation of the valve spool. The corresponding restrictive orifice controls or programs the rate of flow from the piston chamber so as to effect a relatively slow time span desired in opening or uncovering such metering slots. A spring system mounted at the other end of the spool, in a cavity, is provided to return the selector valve to its neutral state upon de-energization of the solenoid.

3,736,959

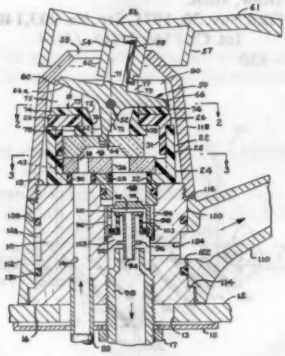
SINGLE LEVER FAUCET

Richard G. Parkison, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. No. 698,830, Jan. 18, 1968, which is a continuation-in-part of Ser. No. 423,534, Jan. 5, 1965, abandoned. This application Dec. 9, 1971, Ser. No. 206,400

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.17 16 Claims



A water mixing faucet having a support pedestal which rotationally receives the barrel portion of a rotary spout. The pedestal contains water passages for the hot supply stream, the cold supply stream, and the mixed stream leading to the rotary spout. Flow control is achieved by means of ceramic disc valve elements contained within a novel cartridge positioned atop the pedestal. Valve replacement can only be achieved by substitution of a new valve cartridge.

3,736,960

DIGITAL VALVE

Kenneth W. Cohen, Chesterland, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

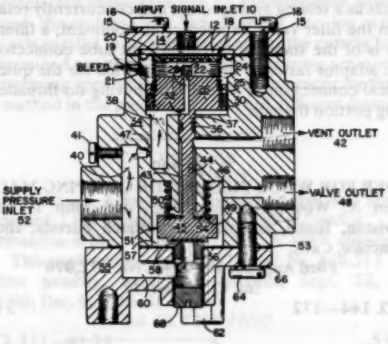
Filed May 24, 1971, Ser. No. 146,035

Int. Cl. F16k *31/365*

U.S. Cl. 137—625.6 7 Claims

A snap-acting, fluid amplifying valve having an input pressure chamber actuating a spring loaded diaphragm. Depending on whether the input pressure is higher or lower than a preset level, the diaphragm, respectively, expands or contracts to restrict or relive a nozzle assembly mounted on a slidable piston, within the body of the valve, causing the piston to act in a digital manner. This digital action results from the positive feedback of pressure from the nozzle restriction to the driving side of the piston which forces the piston and nozzle to move farther in the direction of initiated motion. The slidable piston is rigidly connected to a second piston which alternately seals either a supply pressure port or a vent port of the outlet

chamber and, in this way, a digital signal of supply pressure is obtained. The spring loading of the diaphragm is determined



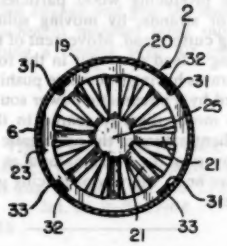
of nozzle restriction and consequently digital action occurs at pressure levels preset by the stiffness of the spring used.

3,736,961

HEAT EXCHANGER FOR FURNACE PIPES AND THE LIKE

Robert D. Walsh, 11 S. 544 Oakwood Avenue, Lemont, Ill.

Filed Nov. 10, 1971, Ser. No. 197,228
Int. Cl. F15d *1/02*; F28f *1/40*
U.S. Cl. 138—38 **7 Claims**



A heat exchanger device for use between a furnace or boiler and chimney comprising a housing pipe and heat transfer thin metal disks with vanes arranged spoke like. Each disk has an annulus in tight contact with the interior of the pipe and the vanes, being thin and confined between a center hub-like structure and the annulus, tend to warp to increase their angular deflection of the gasses as the temperature rises to effect pronounced scouring on the interior of the pipe to maximize heat transfer into the pipe and thereby to the atmosphere. The annuli of the axially spaced disks are rigidified by interconnecting rods.

3,736,962

HARNESS CONNECTOR FOR JACQUARD MACHINES

Albert Rademacher, Willich, Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Germany

Filed Dec. 16, 1971, Ser. No. 208,585
Int. Cl. D03c *13/00*
U.S. Cl. 139—85 **4 Claims**

A one-piece harness connector of suitable synthetic material for Jacquard machines which has a loop at one end which can be bent apart; when the loop is closed, the end rests in a support provided on the base of the loop, the support being operative in the longitudinal direction of the harness connector. The present invention is characterized primarily in that the support on the base of the loop comprises a collar-like reinforcement and the end of the loop comprises a conical ex-

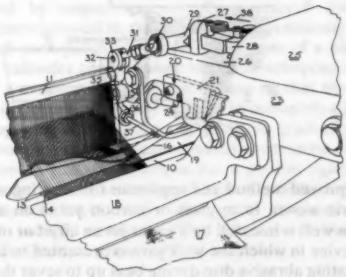
tension with a longitudinal slotted cutout which is adapted to overlap the reinforcement and to embrace and partially catch behind the shank of the harness connector.

3,736,963

WEFT YARN CONTROL DEVICE

Leroy K. Allison, Blacksburg, S.C., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1971, Ser. No. 210,391
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 R **1 Claim**



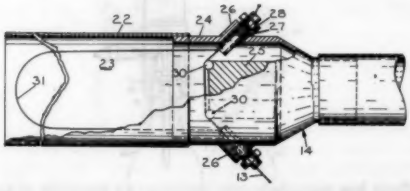
A weft yarn control device for assuring proper positioning of the weft yarn during the second phase of the weaving cycle in shuttleless looms of the type wherein weft yarn from a stationary source is inserted individually into separate sheds of warp threads in pairs of interconnected picks.

3,736,964

WEFT STORAGE DEVICE

Joseph M. Budzyna, East Douglas, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1972, Ser. No. 220,194
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 H **2 Claims**



A weft storage device for shuttleless looms having a stationary source of weft supply which includes an elongated air

passage device defining a weft chamber through which air is directed to temporarily store a pre-measured length of weft under tension prior to its insertion into a shed of warp threads.

3,736,965

MEANS FOR SEVERING OF WEFT YARN DURING WEAVING

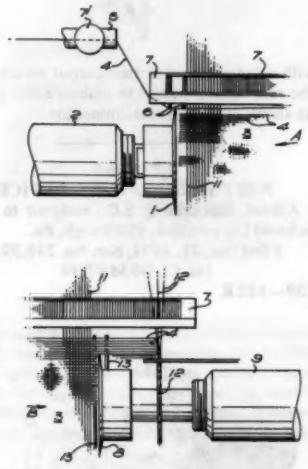
Sidney Yates, Todmorden, England, assignor to Fothergill & Harvey Limited, Summit, Kittleborough, England

Filed May 19, 1971, Ser. No. 144,837

Claims priority, application Great Britain, May 26, 1970, 25,140/70

Int. Cl. D03d *49/70*

U.S. Cl. 139—302 **3 Claims**



An improved method and apparatus for severing weft yarns in a fabric woven from glass or carbon yarns on a loom in which the weft is inserted by a water jet an airjet or other shuttleless device in which the weft yarn is presented to a continuously rotating abrasive disc during beat up to sever the yarn.

3,736,966

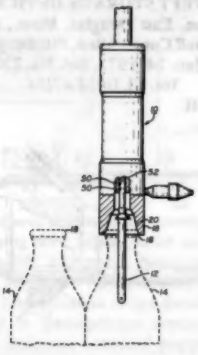
QUICK-CONNECT VENT TUBE STRUCTURE

Anthony J. Dichiara, 133-03 128th Street, South Ozone Park, Queens, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,947

Int. Cl. B65b *3/18*; B67c *3/00*

U.S. Cl. 141—392 **9 Claims**



A quick-connect vent tube used in the filler valves of automatic bottle and can beverage filling machines. Vent tube is of unitary one-piece construction formed from corrosion-resistant metal or thermoplastic material for long term use and high resistance to bacterial accumulation on the vent tubes, and has an O-ring seal connection for mounting in a valve. The seal acts as a sealing arrangement and concurrently retains the tube in the filler valve. In another embodiment, a filler valve, which is of the standard threaded vent tube connector type, has an adaptor fastened thereto to provide for the quick-connect seal connection of a vent tube having no threaded connecting portion thereon.

3,736,967

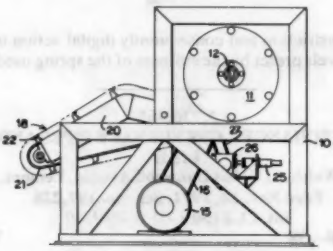
FEEDER FOR WOOD FLAKING OR CHIPPING MACHINE

Warren A. Wood, Oswego, Oreg., and John T. Fechner, Lewiston, Idaho, assignors to Potlatch Forests, Inc., San Francisco, Calif.

Filed Aug. 16, 1971, Ser. No. 172,070

Int. Cl. B27c *1/12*

U.S. Cl. 144—172 **3 Claims**



A device for producing wood particles, such as chips, wafers, flakes or strands, by moving solid wood material toward a moving cutter head. Movement of the material is accomplished along a feed conveyor in the form of an endless conveying apparatus having transverse pushing bars. The conveyor is powered by a pneumatic power source, such as a rotary pneumatic motor directly geared to the conveyor elements. The resilient nature of the pneumatic power source assures quick recovery of the wood material as it is urged toward the moving cutter head, thereby producing particules of more uniform thickness.

3,736,968

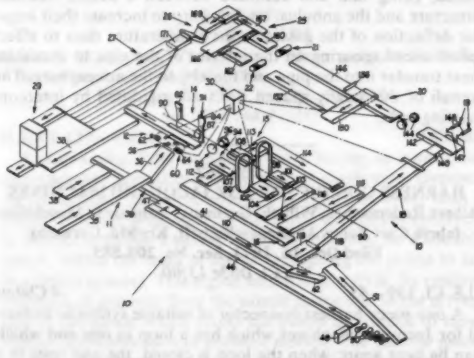
METHOD AND APPARATUS FOR PROCESSING LOGS

Howard C. Mason, Oregon City, Oreg., assignor to Sun Studs, Inc., Roseburg, Oreg.

Filed Nov. 25, 1970, Ser. No. 92,581

Int. Cl. B27b *1/00*

U.S. Cl. 144—312 **5 Claims**



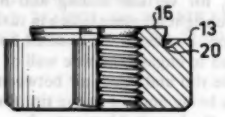
A method and apparatus for processing logs to obtain an optimum amount of wood products of predetermined quality

from each log. The method includes the steps of positioning each log along a reference axis, electronically scanning the log to determine certain of its dimensions with respect to the reference axis, computing the center axis of the largest surface of a preselected shape that can be superimposed within the measured dimensions, and repositioning the log with the center axis parallel to an index line such as the cutting line of a predetermined processing equipment. Scanning arrangements and processing apparatus are disclosed for practicing the steps of the method in the processing of logs of different diameters.

3,736,969
PIERCE NUT

Herman K. Warn, Asvagen 16, Hallstahammar, and Sixten H. Lejdegard, Lilla Annehill, Ramnas, both of Sweden

Continuation of Ser. No. 871,661, Nov. 3, 1969, abandoned. This application July 20, 1971, Ser. No. 160,313
Claims priority, application Sweden, Sept. 22, 1966, 12776/66; Dec. 6, 1966, 16641/66
Int. Cl. F16b *39/00*
U.S. Cl. 151—41.73 **5 Claims**

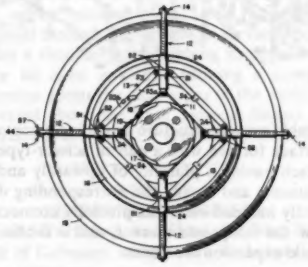


A pierce nut having an attachment member extending axially from one end of a nut body. The attachment member is adopted to pierce a sheet member and then secure the nut to the sheet member. The attachment member is substantially square in transverse section and has a groove formed in its sides so that it can engage and grip the sheet member. The sides of the attachment member taper outwardly from its outer edge forming a cutting edge for piercing the sheet member.

3,736,970
TIRE TRACTION DEVICE

John R. Clark, East 13717 Heroy Avenue, Spokane, Wash.

Filed Aug. 12, 1971, Ser. No. 171,062
Int. Cl. B60c *27/04*
U.S. Cl. 152—226 **5 Claims**

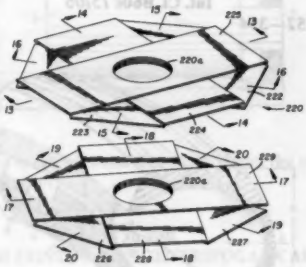


A tire traction device, that can be placed from one side upon a tire resting on a supporting surface, providing a central, flexible, fastening band carrying plural radial extending traction arms to fit about the outer side and periphery of a tire with medial, releasably positioned spacing means communicating between adjacent traction arms. The peripheral portion of the traction arms adjust to accomodate to tires of varying widths and the inner fastening band adjusts to accomodate to tires of varying diameters. The traction arms are movably biased to accommodate to change in tire shape upon motion and the traction elements, per se, are releasably held for simple replacement.

3,736,971
AMPHIBIOUS TIRES WITH IMPROVED TORQUE RESISTANCE PROPERTIES

Richard Henry Paul, and James Perry Wilson, Indianapolis, both of Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,861
Int. Cl. B60c *9/00*
U.S. Cl. 152—353 **15 Claims**

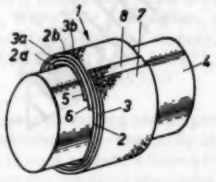


An amphibious tire construction for use with "all-terrain" vehicles and having improved resistance to failure, particularly in the hub area under severe acceleration and braking stresses are disclosed. In such a tire, the axial openings in the sidewalls are disposed concentrically with a rigid, tubular hub, and the side-walls are vulcanized or bonded at their radially inwardmost edge regions bounding said openings, directly to the respective opposite ends of the hub. The sidewalls are reinforced by respective centrally apertured disc-shaped patches incorporated in the sidewalls concentrically with the hub. Each such patch consists of a laminate of a plurality of strips of calender coated fabric stock superimposed on each other in a crossing, asterisk-like fashion so that the patch is thickest in the region thereof which is immediately adjacent its central opening and decreases in thickness gradually through the surrounding regions located radially outwardly of the central region. A tire so reinforced has a greater rigidity at the critical area thereof, which is in the vicinity of the hub, than at other sidewall areas, with this rigidity decreasing in the direction radially outwardly from the hub so that overall sidewall flexibility is effectively not impaired.

3,736,972
PNEUMATIC TIRE AND METHOD FOR THE MANUFACTURE THEREOF

Ernst Petraschek; Oskar Mick, both of Maria Enzersdorf; Erich Kresta, Perchtoldsdorf; Josef Windbichler, Gemeinde Lanzenkirchen, and Johann Zoechling, Baden, all of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Filed Feb. 5, 1971, Ser. No. 112,957
Claims priority, application Austria, Feb. 20, 1970, A1591/70
Int. Cl. B60c *9/12*
U.S. Cl. 152—354 **7 Claims**



There is disclosed an improved pneumatic tire and method of manufacturing thereof wherein such pneumatic tire incorporates a compounded layer consisting of at least two plies and arranged in spiral-like configuration at the tire.

3,736,973

RADIAL TIRES HAVING A SIDEWALL-STIFFENING STRUCTURE

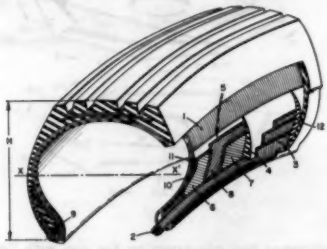
Mario Mezzanotte, Milan; Ferdinando Carretta, Monza, and Gianni Turchetti, Bresso, all of Italy, assignors to Industries Pirelli S.p.A., Milan, Italy

Filed Mar. 6, 1972, Ser. No. 231,953

Claims priority, application Italy, Mar. 17, 1971, 21876 A/71

Int. Cl. B60c *15/06*

U.S. Cl. 152—354 8 Claims



A pneumatic tire is disclosed having improved sidewall flexibility by using a reinforcing structure between the bead zone comprised of at least two strips of textile cord sandwiching a strip of metal cord. The angle formed between the textile cord strips and the circumferential line of the tire is 15° to 40° and the textile cords are parallel to one another. The metal cords are also parallel to one another. The angle formed between the metal cord strip and the tire's circumferential line is from 2° to 10° greater than the angle between the textile cords and the circumferential line. The angle of inclination of the metal cord strip is in a direction opposite to the textile cord strips.

3,736,974

TIRE HAVING BEAD WIRES TANGENT TO ONE ANOTHER

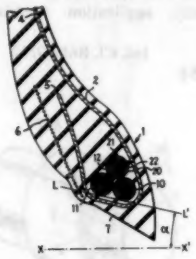
Daniel LeJeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Mar. 10, 1971, Ser. No. 122,934

Claims priority, application France, Mar. 13, 1970, 7009583

Int. Cl. B60c *15/04*

U.S. Cl. 152—362 R 10 Claims



A tubeless radial truck tire is formed with an assembly of three bead wires in each bead around which the ends of the carcass ply or plies are wound. The bead wires are braided and of circular cross section and in each bead each bead wire is tangent to the other two.

3,736,975

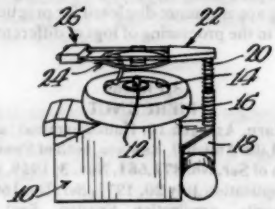
TIRE BEAD SEATING AND INFLATING APPARATUS

Elmer J. Strang, and Ray A. Scott, both of Fort Dodge, Iowa, assignors to The Coats Company, Inc., Fort Dodge, Iowa

Filed Sept. 10, 1971, Ser. No. 179,298

Int. Cl. B60c *25/12*

U.S. Cl. 157—1.1 11 Claims



A tire bead seating and inflating apparatus particularly suited for attachment to tire changers. Included is a base which mounts, for vertical sliding and horizontal pivoting movement, an upright member which in turn mounts, in a cantilevered fashion, a circular air conduit having a plurality of jets and adapted to engage the side wall of a tire radially outwardly from the rim and inject air between the bead and the rim while air is being applied to the tire through the valve by means of a selectively actuable air chuck.

3,736,976

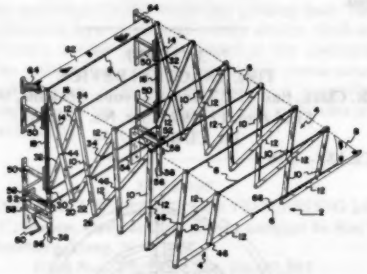
RETRACTABLE AWNING STRUCTURE

Timothy Hoyt Palmer, 6714 South 1680 East, Salt Lake City, Utah

Filed June 17, 1971, Ser. No. 154,096

Int. Cl. E04f *10/06*

U.S. Cl. 160—70 1 Claim



A retractable awning structure providing a convexly curved exterior surface formed with a pair of scissor-type expansion members each having a plurality of upwardly and outwardly inclined elements and having the corresponding downwardly and outwardly inclined elements pivotally connected to each other below the midpoints thereof, and a fabric cover supported by said expansion members.

3,736,977

METHOD OF PROTECTING BUTT JOINTS OF PLATE MOLDS FOR CONTINUOUS CASTING

Walter Stockinger, S-14700 Tumba, Sweden, assignor to Concast AG, Zurich, Switzerland

Filed Mar. 24, 1971, Ser. No. 127,838

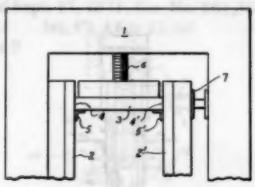
Claims priority, application Sweden, Mar. 26, 1970, 4596/70

Int. Cl. B22d *11/02*

U.S. Cl. 164—14 5 Claims

In a plate mold for continuous casting the gaps which may be formed at the butt joints between the longitudinal and

transverse mold walls due to thermal expansion are sealed by



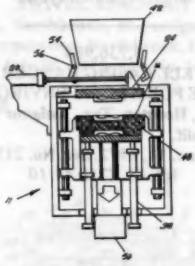
covering the joints and the areas of the mold walls immediately adjacent the joints with a thin layer of protective material.

3,736,978

MOLD FORMING APPARATUS WITH FLASK HAVING OPPOSED SHOULDER PORTIONS

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Feb. 26, 1971, Ser. No. 119,112
Int. Cl. B22c *15/08, 17/06, 21/00*
U.S. Cl. 164—187 **10 Claims**



The mold forming apparatus includes a flask, upper and lower pattern plates, a chute for disposing molding medium into the mold chamber formed by the flask and lower pattern plate, and a plurality of fluid actuated cylinders for raising the flask and lower pattern plate to compress the molding medium against an upper pattern plate, and for displacing the completed mold through the flask to an elevated position. The flask includes a shoulder portion along its opposite sides and intermediate its open ends for forming a complementary shoulder portion about the side edges of the mold. When the mold is elevated above the flask, support fingers engage the shoulder portion of the mold for supporting the latter.

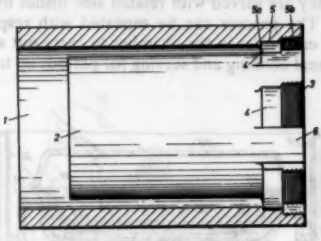
3,736,979

DIE FOR TUBE PROFILES

Heribert Krall, Wurzburg, and Hans Adalbert Koch, Hochberg, both of Germany, assignors to Technica-Guss GmbH, Wurzburg, Germany

Filed Jan. 22, 1971, Ser. No. 108,758
Claims priority, application Germany, Jan. 30, 1970, P 20 04 193.4
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 **4 Claims**

A die arrangement for continuous casting tube profiles having an outer cylindrical-like die portion and a mandrel spaced in the bore of the outer die portion, the mandrel is held radially in the bore by a cylindrical collar thereon at one end fitting into a surrounding cylindrical recess in the outer die portion and is held in an axial direction by a threaded portion on the same end of the mandrel threadedly received in a surrounding threaded portion of the outer die portion. There are axially extending passageways through the collar and threaded portions of the mandrel for flow of casting material to form



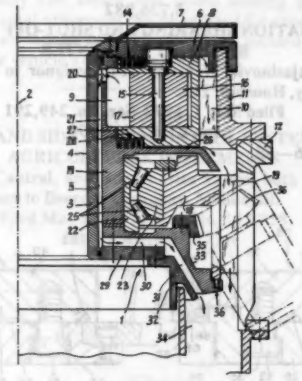
the tube in the space between the mandrel and the surrounding outer die portion.

3,736,980

MOLD FOR CONTINUOUS CENTRIFUGAL CASTING

Pierre Peytavin, Neuilly-sur-Seine, and Louis Babel, Sauvigny-les-Bois, both of France, assignors to Societe Civile D'Etudes DeCentrifugation, Paris, France

Filed Dec. 28, 1971, Ser. No. 212,997
Claims priority, application France, Dec. 30, 1970, 7047337
Int. Cl. B22d *11/06, 13/02*
U.S. Cl. 164—283 **19 Claims**



Mold for continuous centrifugal casting comprises a rotary inner part in contact with the metal being cast and a stationary outer part through which cooling liquid is supplied, the two parts being connected by rotary seals of the labyrinth type.

3,736,981

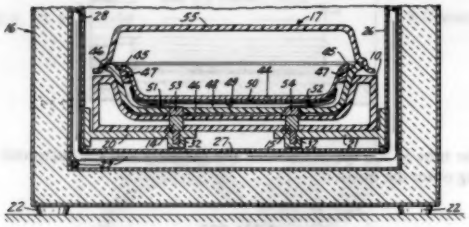
DEVICE AND METHOD FOR STORING AND COOKING FOODSTUFFS IN A REFRIGERATED ENVIRONMENT

Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 20, 1971, Ser. No. 173,414
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 **6 Claims**

A method and device for storing and preparing entire meals in a refrigerated environment. Thermally insulated heating casseroles adapted to cook an entree from a frozen state along with unheated thermally insulated casseroles containing side dishes in frozen and/or chilled state are placed in removable trays which in turn are inserted into a chamber maintained at refrigerated temperatures. Each tray is adapted to hold at least one heating casserole to cook the entree along with one or more casseroles containing side dishes. Heat is applied to

selected heating casseroles to cook the entrees therein while the chamber and all remaining casseroles are maintained at refrigerated temperatures. After the selected entrees are cooked, they are served with related side dishes by means of the trays. The process can be repeated with respect to the remaining casseroles in the chamber to carry out a repetitive series of meal cooking and serving for periods up to 24 hours.



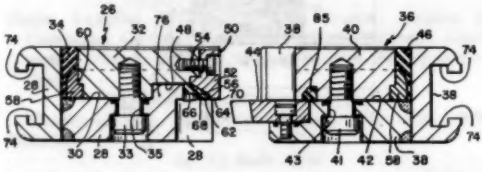
The refrigerated temperature levels within the chamber and the thermal insulation of each of the casseroles retards the exchange of heat between the contents of the unheated casseroles and the immediate environment so that any frozen entrees not selected for cooking and frozen side dishes do not thaw to a substantial degree and chilled side dishes do not freeze to a substantial degree.

3,736,982

COMBINATION SHEARING AND SHUT-OFF RAM FOR BLOWOUT PREVENTER

Ado N. Vujasinovic, Houston, Tex., assignor to The Rucker Company, Houston, Tex.

Filed May 1, 1972, Ser. No. 249,291
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 **18 Claims**



A ram block is carried by ram holders in each of two ram assemblies in ram-receiving chambers within a blow-out preventer. One ram block is provided with a downwardly opening recess formed to accommodate a seal member on the lower side thereof but spaced from a diametrical open side of the ram block. The other ram block is provided with a shearing blade projecting from a diametrical open side of the second ram block holder and adapted to coact with the first ram block to shear a drill string and after the shearing action to sealingly engage the seal member of the first ram block when the rams are moved to the closed position.

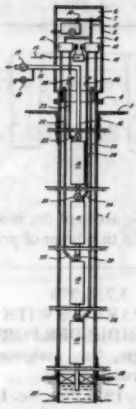
3,736,983

WELL PUMP AND THE METHOD OF PUMPING

Franklin Beard, and Nelson E. Schwartz, both of 11710 Old Main Loop, Houston, Tex.

Filed July 26, 1971, Ser. No. 166,208
Int. Cl. E21b *43/00*; F04b *23/02*
U.S. Cl. 166—313 **6 Claims**

A pump for use in wells having a production string in which is mounted pressure tanks into which an air flow is directed in an alternating cycle to pressurize and exhaust said tanks and the novel method of pumping fluid from a well by alternately



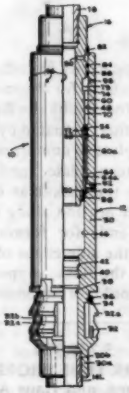
pressurizing and exhausting air from alternate chambers at timed intervals and on preregulated cycles.

3,736,984

DOWNHOLE WELL CASING HANGER ESPECIALLY SUITABLE FOR ARCTIC ENVIRONMENT

Michael R. Garrett, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 11, 1972, Ser. No. 217,023
Int. Cl. E21b *43/10*
U.S. Cl. 166—208 **7 Claims**



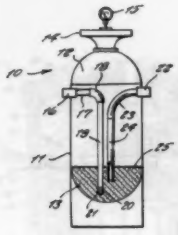
A downhole well casing hanger apparatus especially suitable for use in arctic areas where a layer of permafrost covers the ground. The apparatus comprises a hanger unit for suspending a string of casing at a subsurface location, such as in the consolidated earth below the permafrost layer, and a combined casing landing sub-cement squeeze tool for interconnecting an upper section of casing to the hanger, for cementing the well, and also for conducting a squeezing operation on the well. The landing subsqueeze tool is connected to, and released from, the hanger unit solely by right hand rotation, which can be performed without damaging the sheath of insulation material that surrounds the section of casing that extends through the permafrost layer between the hanger and the surface.

3,736,985

DRY CHEMICAL UNIT-FIRE TRUCK

William E. Beckley, 821 Fairwood Avenue, Marion, Ohio

Filed Sept. 17, 1971, Ser. No. 181,365
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 P 1 Claim



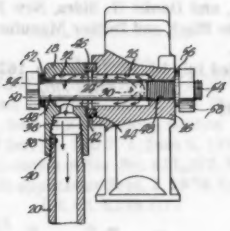
An appliance for safely and economically combating fires in oil fields, the appliance comprising a large container for holding dry chemical which is discharged at high pressure with a dry gas comprising nitrogen.

3,736,986

SWIVEL ASSEMBLY

John T. Magdars, Northbrook, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.

Filed July 28, 1971, Ser. No. 166,833
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 R 2 Claims



A simplified swivel assembly for a fire extinguisher. The assembly includes a fire extinguisher valve body including a bore comprised of an enlarged portion through which fire extinguishing material may pass and a reduced, threaded portion for receiving the threaded end of a conventional bolt. A swivel block having an inlet adapted to be aligned with the bore enlarged portion and an outlet at an angle thereto is also provided. The inlet terminates in a reduced diameter portion having a diameter approximately equal to that of the shank of the bolt so that a bolt may pass therethrough to be received in the threaded reduced portion of the bore in the valve body to rotatably mount the swivel block on the valve body. A ring of bearing-like sealing material is interposed between the valve body and the swivel block.

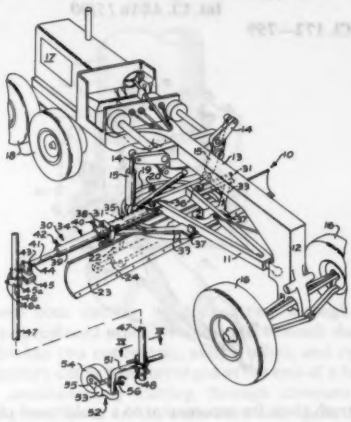
3,736,987

OUTRIGGER BOOM FOR EARTHWORKING VEHICLES

Gene B. Easterling, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 22, 1971, Ser. No. 201,087
Int. Cl. A01b *63/111*; E02f *3/76*
U.S. Cl. 172—4.5 5 Claims

An outrigger boom has an elongated, angular support cradle which can be attached to an earthworking vehicle or its movable earthworking element and a telescoping boom assembly having its inner end pivoted on the inboard end of the cradle so that the boom assembly can be aligned with the cradle and tightly clamped therein when in use to rigidly couple them so a universally adjustable mounting device at the outer end of the boom assembly can attach and orient sensing transducers whereby external references can be utilized for control system reference even though such references are located somewhat remote to the vehicle's operating area.

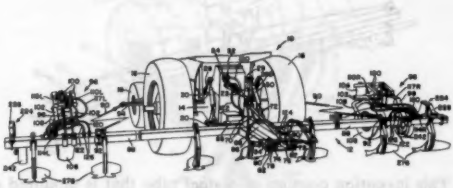


3,736,988

DEPTH AND SIDE DRAFT CONTROL SYSTEM FOR AGRICULTURAL IMPLEMENTS

John Isaac Cantral, and Robert Otto Taube, both of Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed May 17, 1971, Ser. No. 143,938
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 27 Claims

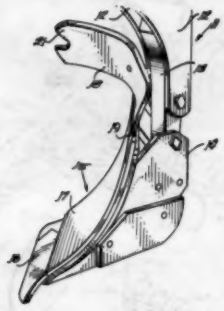


A control system for the outer sections of an integral flexible implement automatically adjusts the outer sections in response to deviations of the outer sections from a preselected position with respect to the ground surface. Provision is also made whereby one of the outer frame sections may selectively be made responsive to draft loads so that when unequal draft forces are imposed upon opposite sides of the tractor hitch, the one frame section is vertically adjusted to balance the draft loads on opposite sides of the tractor hitch. The control system also includes means to render the depth sensing and side draft sensing means inoperative and raise the outer frame sections on their gauge wheels to a raised transport position.

3,736,989
FLEXIBLE PLASTIC TRASH PLATE FOR A MOLDBOARD PLOW

Kent B. Randol, Naperville, and Robert L. Redford, Westmont, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 443,029, March 26, 1965, abandoned. This application Aug. 17, 1970, Ser. No. 64,624
Int. Cl. A01b 15/00
U.S. Cl. 172—759 5 Claims

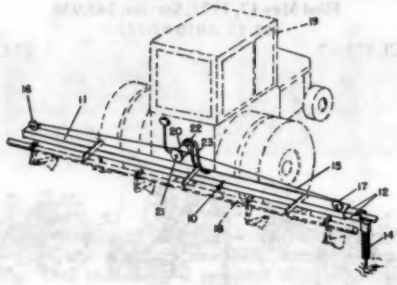


A trash plate for securement to a moldboard plow having a smooth soil engaging surface and made from a flexible plastic material. The trash plate having sufficient rigidity to withstand the soil pressure thereagainst and sufficient flexibility under said pressure to inhibit the adherence of soil thereto.

3,736,990
TELESCOPING ROW MARKER

J. O. Rogers, Jr., Star Route, Pearce, Ariz.

Filed Sept. 20, 1971, Ser. No. 181,708
Int. Cl. A01b 17/00
U.S. Cl. 172—131 4 Claims

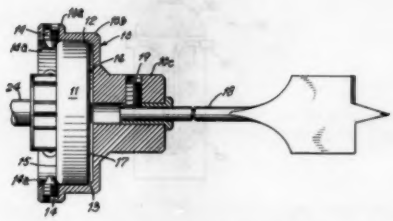


This invention consists of a steel tube that is mounted on and at right angle to a tractor. The aforesaid steel tube is rectangular when viewed from the end and has two steel tubes that are round when viewed from the end mounted in the first mentioned steel tube. The aforesaid two steel tubes are equally spaced and parallel to each other and are suitably secured together by means of a plurality of equally spaced and parallel rectangular plates on the top thereof. A spring-loaded row marker is hingedly secured to each end of the aforesaid two last mentioned steel tubes. The just mentioned two steel tubes are slidably moved in and out of the first mentioned steel tube by means of a steel cable having its ends suitably secured to the aforesaid two steel tubes. The aforesaid steel cable is wrapped around a pulley mounted on the shaft of a reversible hydraulic motor that is secured to the rear end of the tractor. The aforesaid hydraulic motor is activated through the two hydraulic hose that connect the motor to the hydraulic system of the tractor.

3,736,991
DRILLING ATTACHMENT FOR CHAIN SAW

Nelson D. Maine, Church St., Hillsborough, N.H.

Filed July 23, 1971, Ser. No. 165,667
Int. Cl. B27g 17/00
U.S. Cl. 173—29 3 Claims

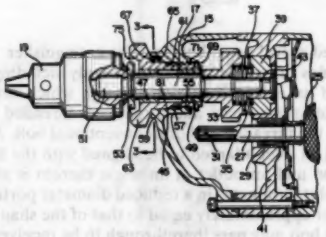


This disclosure describes a tool holding attachment for accommodating a drill or other tool, which attachment is adapted for securing to the exposed clutch member of a portable powered chain saw, thus converting such a saw, for example, to a portable powered drill which can bore large diameter holes in a relatively short period of time.

3,736,992
CONTROL COLLAR AND BEARING SUPPORT FOR POWER TOOL SHAFT

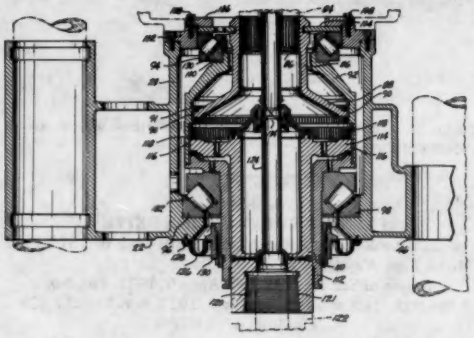
Richard L. Zander, Reisterstown; Erich Ostwald, Baltimore, both of Md., and Daniel H. Sides, New Freedom, Pa., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed July 14, 1971, Ser. No. 162,417
Int. Cl. E02d 7/02
U.S. Cl. 173—48 7 Claims



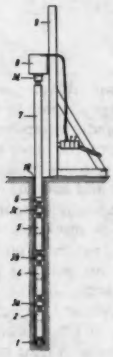
A portable electric tool having a motor supported within a housing and adapted to rotate an output shaft. A toothed, hammer member is fixed to the output shaft and, when engaged with a stationary toothed member, imparts longitudinal impact blows to the output shaft during rotation thereof. An adjustable collar supports the shaft in the tool housing and is operable, in one position of adjustment, to allow the toothed members to engage, and in another adjusted position, to prevent the toothed members from engaging. The collar embodies a novel, simplified construction and is frictionally retained in position during use of the tool. In addition, a novel bearing arrangement is provided between the collar and the shaft to insure proper lubrication of the shaft during use of the tool.

3,736,993
HIGH TORQUE BORING MACHINE
Harold H. West, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.
Filed July 15, 1971, Ser. No. 162,843
Int. Cl. E21b 3/02
U.S. Cl. 173—163 7 Claims



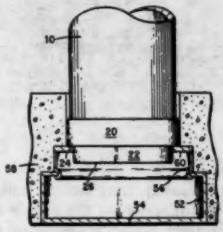
A traveling support frame is mounted for up and down travel along upstanding guide columns. Drilling equipment is carried by the traveling frame. The drilling equipment includes a drive head and means coupling it to a rotary drive member in such a way that bending forces imposed on the drill stem are not transmitted by the drill head to such drive member.

3,736,994
COMPRESSED-AIR DRILLING EQUIPMENT
Josef Vida, Johann Boehmstrasse 21, and Florian Hasewend, Straussgasse 7, both of Kapfenberg, Austria
Continuation of Ser. No. 740,771, June 6, 1968, abandoned, which is a continuation of Ser. No. 411,280, Nov. 16, 1964, abandoned. This application Sept. 2, 1970, Ser. No. 69,184
Int. Cl. E21b 3/12
U.S. Cl. 175—103 7 Claims



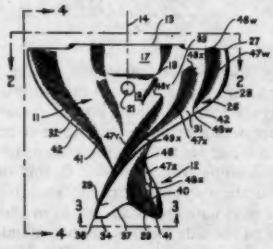
Pneumatic hammer rock drilling apparatus which is ice free and adapted to be operative in a bore hole wherein a water-dirt separator is utilized in the borehole in juxtaposition with the drill.

3,736,995
DIAMOND-IMPREGNATED MASONRY BIT WITH RADIALLY-STEPPED CUTTING FACES
Albert H. Salter, 4114 Redwine Drive, Greensboro, N.C.
Filed June 16, 1972, Ser. No. 263,413
Int. Cl. E21b 9/36
U.S. Cl. 175—330 8 Claims



A masonry core drilling bit for cutting through cast concrete into preplaced utility conduit cells beneath the surface. The bit has two concentric, axially offset, end cutting faces on a unitary cutter head arranged at the end of a hollow shank for simultaneously cutting through concrete and through the metal cover of the embedded cell while, at the same time, providing an enlarged hole in the concrete to accept an insert for a utility outlet. The cutter head of the bit contains 5 to 60 volume per cent uniformly dispersed diamonds in a matrix of substantially pure iron powder, or an iron powder containing 20–80 vol. percent WC, infiltrated during fabrication with a relatively low-melting alloy. Spaced diamonds are provided along the internal and exterior cylindrical surfaces of the cutter head of the bit.

3,736,996
PILOT BIT WITH REINFORCING RIBS
Arthur R. Winters, Fremont, Calif., assignor to Pengo Corporation, Sunnyvale, Calif.
Filed Aug. 28, 1971, Ser. No. 176,773
Int. Cl. E21b 9/22
U.S. Cl. 175—392 8 Claims

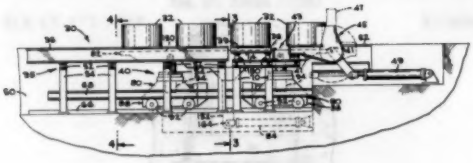


Earth auger pilot bit is an improvement upon U.S. Pat. No. 2,773,673. The body of the bit is triangular when viewed in side elevation from one direction and narrower and thinner when viewed turned 90°. There is a "fish-tail" lower extremity. There are two (or more) spiral cutting blades protruding from the body and extending into the fishtail, the second blade on each side joining the leading blade of the other at the bottom of the bit to reinforce same. The improvement consists of having one or more reinforcing ribs supplementing and reinforcing the fishtail and also the leading spiral blades. The reinforcing ribs resist fracture of the bit upon severe impact and absorb wear, thereby prolonging the life of the bit.

3,736,997
WALKING BEAM CONVEYOR WITH WEIGHING APPARATUS

Robert G. Bottorf, Jenkintown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed June 21, 1972, Ser. No. 265,007
Int. Cl. G01g *19/00*
U.S. Cl. 177—145 **25 Claims**

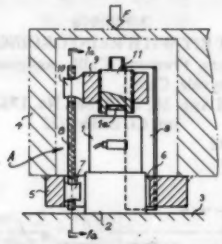


A hydraulically operated, long stroke walking beam conveyor with provision for weighing the article being conveyed and suitable for operation in high temperature environments is disclosed. The weighing is accomplished by load cells mounted on a fixed structure within the path of the movable carriage of the walking beam conveyor or the load cells are built into the carriage itself. Both embodiments avoid the need for a separate weighing scale.

3,736,998
DEVICE FOR APPLICATION OF FORCE

Rune Nils Allan Flinth, and Kjell Helge Nordstrom, both of Vasteras, Sweden, assignors to Safelink AB, Vasteras, Sweden

Filed Apr. 20, 1971, Ser. No. 135,622
Claims priority, application Sweden, May 5, 1970, 6168/70
Int. Cl. G01g *21/10*
U.S. Cl. 177—187 **22 Claims**



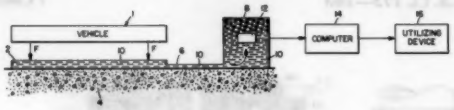
A device or adaptor for transmitting force between load supporting structure and a load cell including a first member which rests on the load cell and a second member connected to the load supporting structure with the two members being interconnected by at least three force transmitting elements such that side loading forces applied to the load supporting surface permits the two members to move relative to each other thereby to isolate the load cell from the side loading. Upon removal of the side loading the two members automatically return to their original positions. Provision is also made to compensate for shock loads or overloads through the use of resilient elements incorporated in the device.

3,736,999
AUTOMATIC VEHICLE COUNTING AND WEIGHING SYSTEM

Ernest E. Lademann, Park Ridge, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 30, 1971, Ser. No. 185,021
Int. Cl. G01g *5/04*
U.S. Cl. 177—208 **2 Claims**

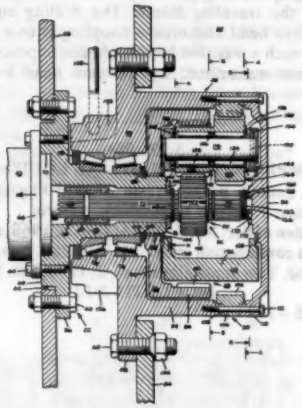
A vehicle exerts a force on a fluid in a container and which force is transmitted to a sensor supported in the container. The sensor senses the force and provides corresponding signals, and means are provided for utilizing said signals to determine predetermined vehicle parameters which are a function of the force.



3,737,000
PLANETARY REDUCTION DRIVE

John C. Knobloch, and Ray M. Shepard, both of 7515 Fritz Road, Fort Wayne, Ind.

Division of Ser. No. 132,707, April 9, 1971, Pat. No. 3,686,928. This application May 9, 1972, Ser. No. 251,828
Int. Cl. B60k *17/30, 23/00*
U.S. Cl. 180—43 B **7 Claims**

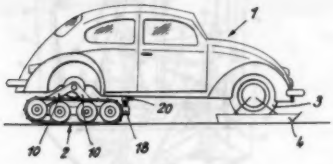


A planetary reduction drive, particularly for a vehicle wheel. A mounting flange adapted to be secured to the vehicle frame has a hollow spindle extending from one side, and a drive motor is mounted on the other side of the flange with its output shaft extending into the spindle. An input shaft is coupled to the motor shaft and extends outwardly from the spindle. A fixed ring gear surrounds the input shaft and is secured to the spindle adjacent its outer end. A housing has a first hub portion surrounding and rotatably mounted on the spindle and a second hub portion surrounding the fixed ring gear, the wheel being mounted on the housing. An output ring gear also surrounds the input shaft and is secured to the second hub portion of the housing. A planet carrier is positioned within the ring gears and supports at least two planet shafts, each of the planet shafts having a cluster of first and second planet gears thereon, the first planet gears meshing with the fixed ring gear and the second planet gears meshing with the output ring gear. The mesh of the planet gears with the ring gears comprises the sole support for the carrier. A sun gear is splined to the input shaft and meshes with one planet gear of each cluster.

3,737,001
TRACK ASSEMBLY FOR CONVERTING WHEELED VEHICLES

Rudolf Rasenberger, Rheinfelder Strasse 19, Grenzach, Germany

Filed May 28, 1971, Ser. No. 147,783
Claims priority, application Germany, May 29, 1970, P 20 26 295.7
Int. Cl. B62d *55/04*; B62m *27/02*
U.S. Cl. 180—5 A **18 Claims**

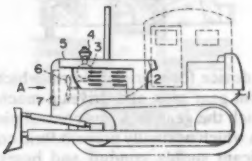


A track assembly for converting a normally wheeled motor vehicle having a plurality of wheel mounts at least one of which is driven, into a track-laying vehicle. Support means of the track assembly has mounted thereon wheel means including ground wheels and drive wheels. Tracks are trained about the wheels and engage with the drive wheels so as to be driven by the same, and coupling means can be bolted or otherwise secured to the driven wheel mount or wheel mounts of the vehicle and is connected in motion-transmitting relationship with the drive wheels of the track assembly so as to transmit motion to the latter.

3,737,002
SUCTION GAS PROTECTIVE DEVICE IN MOTOR VEHICLE

Kokichi Yotsumoto, Sagamihara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sept. 10, 1970, Ser. No. 71,052
Int. Cl. B60k *13/02*; B01d *50/00*
U.S. Cl. 180—69 R **1 Claim**



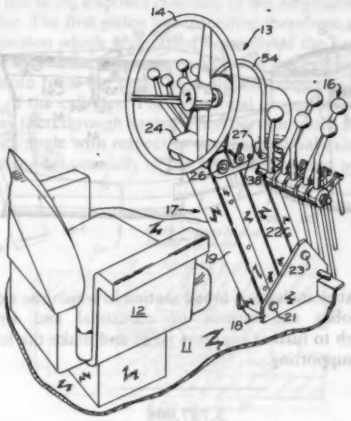
A device including a conduit extending through an opening in a hood of a vehicle and having a circular protection means disposed about the conduit and the opening and serving as a passageway for conducting air from an inlet disposed in the hood into the passageway and thence into the conduit which in turn is connected to an air cleaner.

3,737,003
ADJUSTABLE CONTROL CONSOLE FOR VEHICLES

Duane E. Beals, and Russell D. Page, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 3, 1971, Ser. No. 139,362
Int. Cl. B60k *29/00*
U.S. Cl. 180—78 **11 Claims**

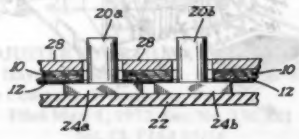
The steering wheel together with other controls of an earth moving vehicle such as a motor grader are mounted on a pedestal which may be selectively tilted for optimum positioning for different operators and to enable a particular operator to sit or stand at his convenience. The pedestal is defined by links pivoted together in a configuration which maintains the steering wheel at a substantially constant inclination and which maintains the other controls at preferred positions relative to the steering wheel and is provided with latch means for locking and releasing the pedestal at a selected inclination with a minimum of effort and diversion of attention. The pedestal and controls are arranged to increase safety by obstructing forward pitching of the operator in the event of abrupt vehicle stoppage while providing for rapid escape from the operator's station at either side of the vehicle.



3,737,004
COMPOSITE ACOUSTIC DECOUPLER

Roland W. Higgs, Orchard Lake, Mich., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 10, 1972, Ser. No. 225,054
Int. Cl. G10k *11/00*; H04b *11/00*; E04b *1/99*
U.S. Cl. 181—0.5 A **7 Claims**



An acoustic decoupler which isolates both shear and longitudinal acoustic waves comprises a body of transversely isotropic low acoustic impedance material with a thin layer of elastomer material attached to one surface of the body of low acoustic impedance material.

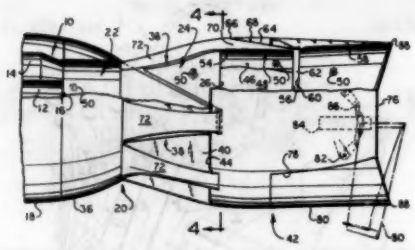
3,737,005
THRUST AUGMENTING AND SOUND SUPPRESSING APPARATUS

Remo Tontini, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Oct. 14, 1971, Ser. No. 189,309
Int. Cl. B64d *33/06*; F01n *1/14, 1/16*
U.S. Cl. 181—33 HC **12 Claims**

An aircraft jet engine is provided with an ejector nozzle which suppresses jet noise and augments thrust during takeoff and climb. The nozzle is formed as an ejector barrel supported aft of the exhaust nozzle and defines, with the nozzle, inlet passage means for free stream air to enter and mix with engine gases in the mixing zone defined by the barrel. The inner wall of the barrel is formed primarily of acoustical and structural honeycomb paneling perforated on the mixing zone side which suppresses noise and makes the inner wall virtually self

supporting. A plenum chamber in the barrel supplies energized gas to an auxiliary jet nozzle in the form of a peripheral slot through the inner wall and receives the gas from the engine through conduits connected to a secondary exhaust noz-



zle. The latter includes a lobed section in which the side walls of the lobes are formed of acoustical and structural honeycomb to further suppress noise and make the lobe side walls self supporting.

3,737,006

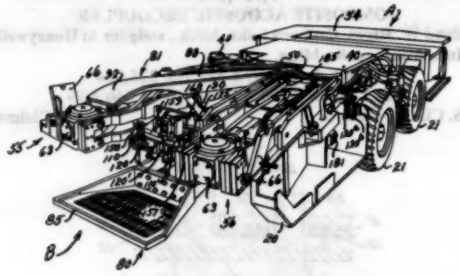
APPARATUS HAVING AN OPERATOR CARRYING AND PROTECTIVE DEVICE

John B. Long, Oak Hill, W. Va., assignor to The Marmon Group, Inc., Chicago, Ill.

Filed Mar. 30, 1971, Ser. No. 129,337

Int. Cl. E04g *1/26*

U.S. Cl. 182—112 **14 Claims**



An operator protective device for operator controlled apparatus, the protective device including a platform upon which an operator may be situated and a canopy extending over at least a portion of the platform and having at least an overhanging portion thereof spaced from the platform to provide a protective cover over an operator situated on the platform. Means is provided to selectively increase and decrease the relative spaced apart distance between the platform and the portion of the canopy which extends thereover, which means may also include means for movement of both the platform and the canopy as a unit with respect to the apparatus while maintaining a fixed relative spaced apart distance between the platform and the portion of the canopy which extends thereover.

3,737,007

ADJUSTABLE SCAFFOLD

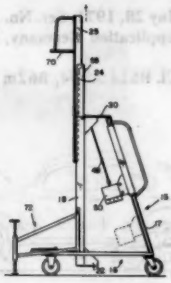
Robert C. Herrell, Indianapolis, Ind., assignor to Baker-Ross Inc., Indianapolis, Ind.

Filed May 20, 1971, Ser. No. 145,281

Int. Cl. E06c *5/04*

U.S. Cl. 182—210 **8 Claims**

An adjustable scaffold has movable ladder sections and a base with a fixed ladder portion. Cable and pulley assemblies in conjunction with a counterweight permit raising and lowering of the movable ladder sections. Guide means are mounted on the fixed ladder portion to guide movement of the counter-



weight. A locking device has dogs which selectively engage a plurality of vertically spaced openings in a movable ladder section to lock the movable sections in desired positions.

3,737,008

LUBRICATING DEVICE FOR A DRIVING WORM ENGAGING A STATIONARILY ARRANGED WORM GEAR RACK

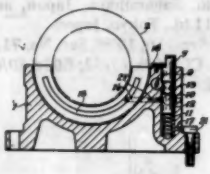
Hans O. Wagner, Buttgen-Vorst, Germany, assignor to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed Feb. 14, 1972, Ser. No. 225,817

Claims priority, application Germany, Feb. 13, 1971, P 21 06 917.0

Int. Cl. F16h *1/20*

U.S. Cl. 184—6.14 **6 Claims**



A lubricating device for a driving worm which meshes with a stationary worm gear rack and drives a machine tool part, according to which the gear rack has control pistons movably arranged therein which normally prevent fluid communication between a lubricant supply conduit and bores in said rack which bores lead to the worm teeth flanks. These pistons when actuated by control bar means connected to the machine tool part are by the control bar means moved into position for establishing communication between the lubricant supply conduit means and the respective adjacent worm teeth flanks.

3,737,009

WHEEL CHAIR LIFT

Joseph L. Stoddard, 9450 Nogales Highway, Tucson, Ariz.

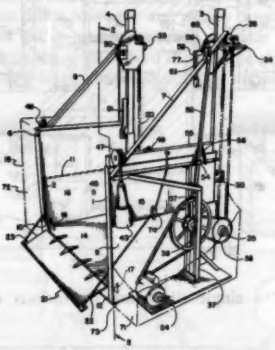
Filed Nov. 1, 1971, Ser. No. 194,675

Int. Cl. B66b *11/04*

U.S. Cl. 187—17 **7 Claims**

A lift is described which provides a convenient and safe means for lifting objects and/or personnel for a limited height. In particular, the lift provides a means whereby a person in a wheel chair may be raised a given distance, such as the height necessary to enter a trailer. In addition to the basic lifting mechanisms, the lift provides a safety feature whereby a lip, connected to the lifting platform and actuated by the upward movement of the platform, pivots upwardly and prevents an inadvertent roll-off of the wheel chair. The structure about the platform includes sheet material about three sides and a

hinged flap across the fourth side. As the platform is raised, the hinged flap, normally urged into a horizontal position by a spring, is pivotally raised underneath the rising platform whereby the fourth side is sealed off to prevent children or pets from crawling under the raised platform with subsequent



injury should the platform lower upon them. On descent, the frontal lip pivots forwardly and downwardly whereby, when the platform contacts the ground, the lip will provide a short ramp to the ground. Simultaneously, the flap, raised into an upright position on ascent, pivots to a horizontal position under force of the spring.

3,737,010

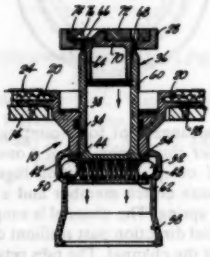
RETRACTABLE POST

Harold C. Nelson, Long Beach, Calif., and Richard A. Sharp, Lakewood, Colo., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed June 3, 1971, Ser. No. 149,461

Int. Cl. B60t *1/14*

U.S. Cl. 188—32 **6 Claims**



A floor mounted retractable post to restrain a serving cart in an aircraft in areas where a fixed post protruding above the floor would present a hazard. A spring-loaded, flush-mounted post is extendible by manual manipulation and is maintained flush with the floor upon depression when not in use.

3,737,011

ADJUSTING DEVICE FOR BRAKE LININGS OF FRICTION BRAKES

Hans-Dieter Reinartz, Frankfurt-Hausen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

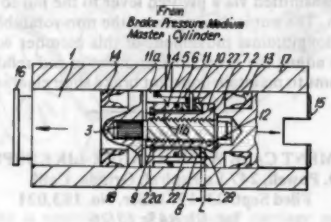
Filed Feb. 16, 1972, Ser. No. 226,777

Claims priority, application Germany, March 13, 1971, P 21 12 241.8

Int. Cl. F16d *65/56*

U.S. Cl. 188—196 BA **9 Claims**

This invention relates to a brake lining clearance adjusting device capable of being used in drum brakes and disc brakes. Compared with existing adjusting devices, the present adjusting device saves space, is less expensive to manufacture and has an easy operating motion. The torque of the back rotation after adjustment does not change the adjustment made. An adjusting spindle which has one end thereof secured to a piston has an adjusting nut threaded thereon, the piston, spindle and nut being disposed coaxially of the longitudinal axis of a cylinder. The first piston has extending therefrom a cylindrical projection which is disposed coaxially of the longitudinal axis and spaced from the inner surface of the cylinder with its end remote from the first piston slidably engaging the inner surface of the cylinder. The cylindrical projection includes a guideway therethrough having a first portion which is included at a given angle with respect to the longitudinal axis. A catch ring is disposed coaxially of the adjusting nut and in a sliding



relation with the inner surface of the cylindrical projection and includes thereon a guide pin engaging the guideway. One end of the catch ring is spaced from a conical portion of the adjusting nut by an amount equal to the desired brake lining clearance. A friction ring is disposed coaxially of the adjusting nut in contact with the other end of the catch ring and in a friction contact with the inner surface of the cylindrical projection. During an adjusting step the end of the catch ring frictionally engages the conical portion of the adjusting nut and through means of the guideway causes rotation of the nut with respect to the spindle to provide the desired adjustment. The friction ring, after an adjustment is made, cooperates in preventing rotation of the adjusting nut to prevent any change in the adjustment made.

3,737,012

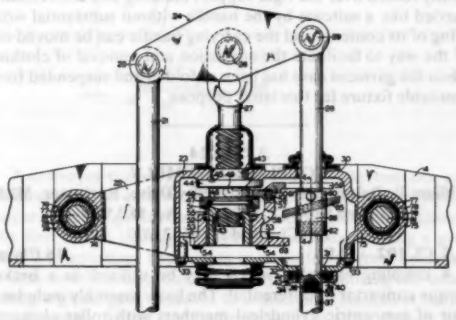
SLACK ADJUSTER FOR RAILWAY BRAKE APPARATUS

Andrew G. Haydu, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 1, 1972, Ser. No. 230,581

Int. Cl. F16d *65/56*

U.S. Cl. 188—202 **12 Claims**



This invention relates to a railway car truck braking rigging including two brake beams one of which carries a brake cylinder device the piston rod of which is so connected by a lever and a link to both brake beams that, upon effecting a brake application, the brake shoes carried by these beams are pressed against the tread surface of the wheels. A slack ad-

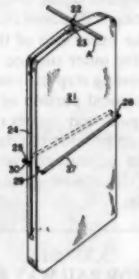
juster mechanism comprises a non-rotatable member that has the lever pivotally mounted thereon adjacent one end thereof. An external non-self-locking screw thread on this member carries a similarly threaded nut, this member being longitudinally movably mounted relative to one of the brake beams. One end of the nut constitutes a clutch face that is normally spring-biased against a stationary clutch face formed on a slack adjuster housing to prevent rotation of the nut and longitudinal movement of the screw member. The slack adjuster mechanism further comprises a clutch dog disposed about the link and normally locked thereto. Means are provided for rocking the dog out of locking engagement with this link upon the occurrence of shoe wear during a brake application after which the link is moved relative to the dog. Upon effecting a release the dog is relocked to the link and thereafter its movement is transmitted via a pivoted lever to the nut to disengage the clutch. The nut is then spun on the non-rotatable member to effect longitudinal movement of this member which is effective to adjust the lever, link and piston rod relative to the brake beams to maintain constant brake shoe clearance.

3,737,013

GARMENT CASE WITH HANGER-LIKE SUPPORT

William D. Powell, 247 La Espiral, Orinda, Calif.

Filed Sept. 23, 1971, Ser. No. 183,021
Int. Cl. A45c *13/26*
U.S. Cl. 190—43 **7 Claims**



A flexible garment case includes a rigid support member attached to its mid-section on one of its outer surfaces and a carrying handle on the opposite side connected to the support member whereby the case and its clothing contents can be neatly folded over the rigid support member and conveniently carried like a suitcase by the handle without substantial wrinkling of its contents and the carrying handle can be moved out of the way to facilitate the admission and removal of clothing when the garment case has been unfolded and suspended from a suitable fixture for this latter purpose.

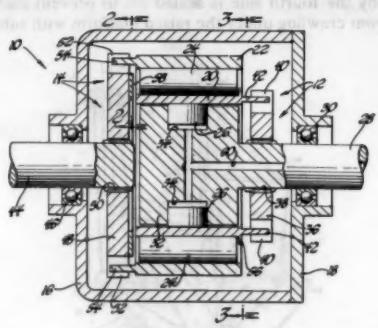
3,737,014

COUPLING ASSEMBLY

William P. Dalrymple, 415 University Drive, Rochester, Mich.

Filed Sept. 27, 1971, Ser. No. 183,929
Int. Cl. F16d *25/06*, *23/00*
U.S. Cl. 192—30 R **15 Claims**

A coupling assembly which may be utilized as a brake, torque convertor or differential. The basic assembly includes a pair of concentric cylindrical members with roller elements disposed therebetween and in rolling engagement with the concentric members. Normally one concentric member may be freely driven or rotated relative to the other, however, the system also includes actuation means for distorting one of the concentric members into an elliptical or other configuration to provide a distortion in the other member which moves therealong in a wave-like fashion, the transmission of energy between the members being proportional to the amount of distortion, i.e., the number or frequency of distortions or the



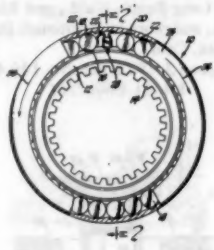
amplitude of a single distortion or various combinations thereof.

3,737,015

SPRING MOUNTING ARRANGEMENT FOR ONE-WAY ROLLER CLUTCH

Lawrence P. Johnson, Huron, and Oscar G. Kitchin, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1972, Ser. No. 256,345
Int. Cl. F16d *41/06*
U.S. Cl. 192—45 **4 Claims**



An improved arrangement for mounting a roller engaging spring on the outer clutch member of a one-way roller clutch comprises a pair of spring mounting lugs protruding from flanges on the outer clutch member and a channel as an integral part of the spring. The channel is snapped onto the lugs in a generally radial direction past resilient detent tabs located at the open end of the channel. The tabs retain the lugs against the bottom of the channel securing the spring to the outer clutch in the radial direction. Securement in the circumferential direction is provided by the flanking engagement of the channel with the lugs. A hook portion may be included on the spring for engagement with the outer clutch member to take up tolerance between the channel and the lugs.

3,737,016

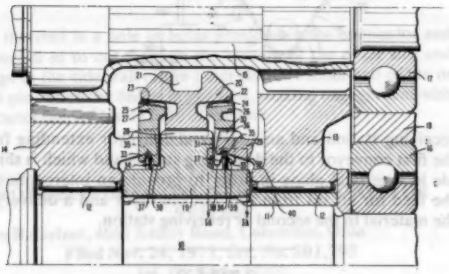
BLOCKING SYNCHRONIZATION FOR CHANGE-SPEED TRANSMISSIONS OF MOTOR VEHICLES

Gunter Worner, 7053 Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 30, 1971, Ser. No. 203,238
Claims priority, application Germany, Dec. 2, 1970, P 20 59 218.1
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 F **14 Claims**

A blocking synchronization for a gear-type change-speed transmission, especially for motor vehicles, in which a shifting

sleeve is non-rotatably but axially displaceably arranged on a carrier and is provided with coupling teeth for the engagement in corresponding counter teeth at a gear; the shifting sleeve is additionally provided with an internal conical surface for the cooperation with the external conical surface of a synchronizing ring which by means of radially inwardly projecting extensions is within limits rotatable and axially displaceable against spring action within apertures of an annular gear extension projecting from the gear toward the shifting sleeve and carrying the counter teeth; inclined surfaces are also provided at



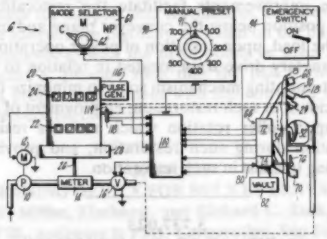
the extensions of the synchronizing ring for the cooperation with correspondingly inclined blocking surfaces provided at the sides of the apertures; the inwardly facing circumferential surface at the annular extension of the gear is constructed as a conical abutment surface for the abutment of an annular spring whereby this abutment surface increases in diameter in the direction toward the shifting sleeve while the annular spring is arranged in an annular groove of the extensions of the synchronizing ring which annular groove is open in the radially inward direction.

3,737,017

FLUID DISPENSING APPARATUS PRESELECTOR SYSTEM

Peter P. Brunone, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed May 20, 1971, Ser. No. 145,398
Int. Cl. G07f *13/02*
U.S. Cl. 194—13 **5 Claims**



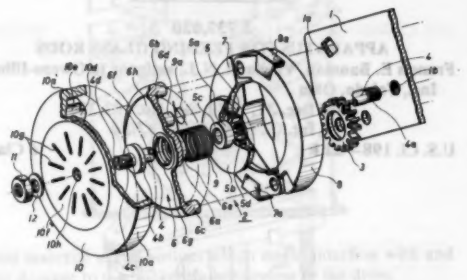
Fuel dispensing apparatus having a coin operated preselector, a knob operated preselector, a mode selector with coin, knob and nonpreselector settings and a logic circuit for operating a two-stage shutoff valve for terminating the delivery of fuel after the preselected amount is dispensed.

3,737,018

ONE WAY CLUTCH AND BRAKE DEVICE

Helmut Helmers, Wilhelmshaven 294, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany

Filed Feb. 4, 1971, Ser. No. 121,018
Claims priority, application Germany, Mar. 28, 1970, P 20 14 996.6
Int. Cl. B41j *19/02*
U.S. Cl. 197—64 **10 Claims**



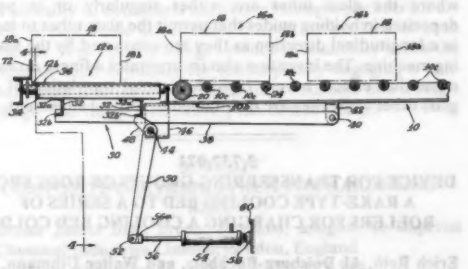
A brake is operated by a typewriter carriage moving in a tabulating direction due to the operation of a one way clutch having cylindrical input and output portions connectable by a coiled clutch spring, and being spaced by an axial gap. A manually turnable shaft has a flange abutting the output part and is threaded into a housing wall for effecting realtive axial displacement of the cylindrical input and output portions, and thereby an adjustment of the width of the gap.

3,737,019

CONVEYOR SYSTEM

Marvin H. Coleman, Winnetka, and Walter A. Leibfritz, Niles, both of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.

Filed Sept. 15, 1971, Ser. No. 180,626
Int. Cl. B65g *47/42, 47/26*
U.S. Cl. 198—21 **5 Claims**



A conveyor system for transferring an article from one continuously driven conveyor to another continuously driven conveyor which is positioned at an abrupt angle with relation to the first driven conveyor while properly maintaining a given article orientation. The system in its preferred form comprises a first continuously driven conveyor for moving an article along a given path of travel to a discharge station. A second continuously driven conveyor, having an inlet station positioned at the discharge station of the first conveyor, is provided to move the article along a second given path of travel which is at substantially a right angle to the path of travel of the article along the first conveyor. Vertically movable article support means is provided at the inlet station of the second conveyor which, in a raised condition, receives an article propelled thereon from the discharge station of the first con-

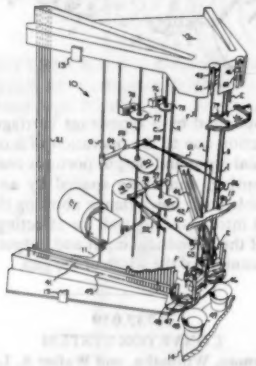
veyor, and supports the article above the inlet station of the second conveyor until the article comes to rest. Lowering of the article support means transfers the article to the second conveyor. Article accelerating means advantageously is positioned at the discharge station of the first conveyor for propelling the article onto the article support means. In addition, article abutment means is provided adjacent to the article support means for engaging a side of the article to assure a given article orientation prior to moving the article along the second conveyor.

3,737,020

APPARATUS FOR FEEDING GLASS RODS

Francis E. Bauman, Vineland, N.J., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 31, 1970, Ser. No. 103,326
Int. Cl. B65g *47/06, 47/80*
U.S. Cl. 198—22 R **6 Claims**



An apparatus for feeding glass tubes to a machine that severs the tubes to a prescribed length. The apparatus includes a plurality of storage racks for storing the glass tubes prior to their advancement. An advancement wheel that moves the tubes one at a time along a curvilinear path to a transfer point where the glass tubes are, either singularly or in pairs, deposited in holding guides that permit the glass tubes to move in a longitudinal direction as they are consumed by the severing machine. The invention also incorporates a finger arrangement that effects a very rapid horizontal translation of the glass tubes while they are maintained in vertical alignment.

3,737,021

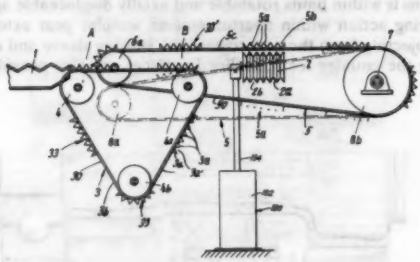
DEVICE FOR TRANSFERRING GROUPS OF RODS FROM A RAKE-TYPE COOLING BED TO A SERIES OF ROLLERS FOR CHARGING A COOLING BED COLD SHEARS

Erich Reth, 41 Duisburg-Buchholz, and Walter Uthmann, 41 Duisburg, both of Germany, assignors to DEMAG, Duisburg, Wolfgang-Reuter-Platz, Germany

Filed Apr. 5, 1971, Ser. No. 131,089
Claims priority, application Germany, Apr. 20, 1970, P 20 18 849.2
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 R **1 Claim**

A device for transferring articles such as rods from a first location such as from a rake type cooling bed to a second location such as onto a series connected roller bed for feeding or charging a cooling bed cold-shears comprises at least one endless conveyor belt which is located between the first station and the second station. The endless conveyor belt if only one is employed includes an effective reach which is shiftable upwardly and downwardly in a vertical plane in order to shift the end thereof which is remote from the pickup or first station in respect to the delivery or second station.

Each conveyor belt includes a plurality of areas along the length which have receiving teeth between which the rods to be transferred are engaged and also an area which is smooth between each receiving tooth section. The apparatus may include a stationary endless conveyor arranged adjacent the



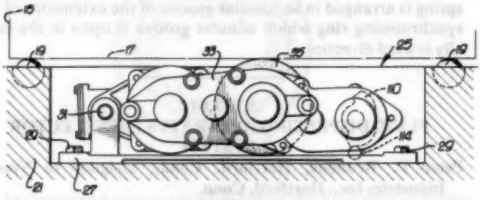
receiving station and an additional conveyor extending from the first conveyor to the depositing station and which is shiftable in a vertical plane in order to provide an interception of the feed for lift off from the first conveyor and a delivery of the material to the second or receiving station.

3,737,022

RAPID RETRACTING TORQUE ACTIVATED DRIVE ROLLER UNIT FOR CONVEYOR SYSTEMS

John H. DeNeefe, Cerritos; Conrad Pistel, Fullerton, and John G. Schwarzbeck, Downey, all of Calif., assignors to Western Gear Corporation, Lynwood, Calif.

Continuation of Ser. No. 80,709, Oct. 14, 1970, abandoned.
This application Apr. 14, 1972, Ser. No. 244,306
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **8 Claims**



Improvements in a torque controlled power roller unit for propelling loads along a conveyor plane defined by associated load-supporting means, in which the roller normally is disposed below the conveyor plane and is translated into contact with a load by the same drive means which also rotates the roller. The improvements facilitate the restoration of the roller to a position below the conveyor plane and out of contact with the load, upon cessation of power operation, and include a planetary drive train located in relation to the roller and roller translating mechanism so as to minimize drive train friction incident to such restoration; employment of a variable restraint upon roller rotation which reduces resistance to roller rotation during such restoration; and provision of a torque spring to assist in such restoration.

3,737,023

CONVEYOR CHAIN ASSEMBLIES

Paul Arthur Collier, Tresco Rock near Kidderminster, Worcestershire, England, assignor to Parsons Chain Company Limited, Stowport-on-Severn, England

Filed Sept. 15, 1971, Ser. No. 180,627
Int. Cl. B65g *19/00*
U.S. Cl. 198—175 **4 Claims**

The invention relates to a chain scraper assembly in which scraper bars are secured at spaced intervales to chain lenghts.

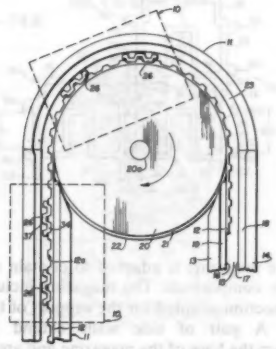
The inventive feature resides in the means for connecting the scraper bar to the conveyor chain by means of a connector having transverse slots adapted to receive a chain link, the chain link being secured in position within the slots by a pin or

pins inserted in a hole or holes provided in the connector and so angled as to cut through the bottom of the outer slot and merge in the side wall of the inner slot, the inner end of the or each pin, when the link is in position, making engagement with the outer face of inside limb of the link.

3,737,024
WORK-SUPPORTING FIXTURE FOR A CONVEYOR SYSTEM

John R. Gelzer, 4660 Kenny Road, Columbus, Ohio

Filed Nov. 24, 1971, Ser. No. 201,795
Int. Cl. B65g *17/00*
U.S. Cl. 198—181 **5 Claims**



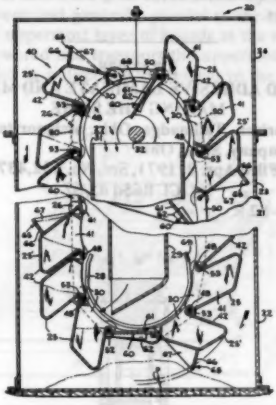
A work-supporting fixture is provided for a conveyor system having an endless conveyor formed with positive engagement elements supported for traversal of a path including arcuate portions. The work supporting fixtures each include a base frame adapted to engage and support a workpiece thereon and a pair of guide tongues adapted to interengage with the conveyor system for support and traversal of the conveyor path. The guide tongues are pivotally mounted on the base frame in spaced relationship with the pivot points or pivot axes being spaced apart a distance such that the pair of tongues will remain in proper engagement with the conveyor throughout the fixture's course of travel.

3,737,025
CLEANING DEVICE FOR BUCKET ELEVATOR

Thomas F. Miller, Elmhurst, and Richard C. Zeck, Bellwood, both of Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 26, 1971, Ser. No. 192,123
Int. Cl. B65g *45/00*
U.S. Cl. 198—229 **18 Claims**

In a bucket elevator a cleaning lip is attached to a few buckets of the bucket and chain line to protrude beyond the normal outer edge of the bucket to remove material in the bottom part of the elevator casing. The material is conveyed to the head of the elevator and combined with the normally elevated material in the discharge chute or otherwise conveyed out of the elevator casing to prevent the buildup of

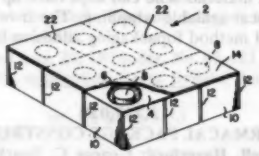


spilled material at the bottom which might interfere with and cause damage to the bucket and chain line or the drive.

3,737,026
STACK PACKAGE

Alten E. Whitecar, Westville, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Mar. 12, 1971, Ser. No. 123,613
Int. Cl. B65d *71/00*, *83/04*
U.S. Cl. 206—42 **1 Claim**

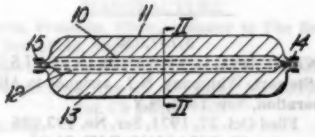


A plurality of containers each have multiple pockets for articles. A rupturable cover sheet covers the pockets of each container. A peripheral flange extends substantially below the bottom of each container for telescopically engaging a container below it to removably unite the containers into a single package. The flange alternatively has detent means.

3,737,027
COMPOSITE CARTRIDGE PACK FOR HARDENING RESINS

Malcolm James Ball, Troon, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 16, 1971, Ser. No. 172,114
Claims priority, application Great Britain, Sept. 1, 1970, 41,733/70
Int. Cl. B65d *81/32*
U.S. Cl. 206—47 A **12 Claims**



A composite pack for a two-component hardening resin comprises two flexible frangible containers, one within the

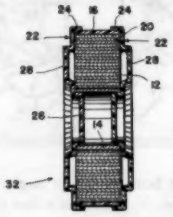
other, each end of the inner container being within an end of the outer and the ends being closed by a compression closure member, one container containing the resin and the other a resin hardener.

3,737,028

PACKAGED ADHESIVE LAMINATE AND METHOD OF MAKING THE SAME

Russell L. Carlson, Tallmadge, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Filed Apr. 8, 1971, Ser. No. 132,437
Int. Cl. B65d *85/67*
U.S. Cl. 206—52 R **10 Claims**



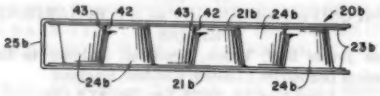
A packaged adhesive laminate is formed by rolling up a laminate adhesive sheet or other material on a cylindrical core, securing a sheet of heat sealable material to the end of the laminate sheet and wrapping the heat sealable sheet around the rooled up laminate, cutting the rolls of material into individual rolls, positioning plastic end caps on each side of the individual rolls, and heat sealing the end caps to the heat sealable material. The end caps have lip portions which overlie the heat sealable wrapping. The invention also concerns a novel method fopackaging adhesive laminates or the like.

3,737,029

PHARMACAL PACKAGE CONSTRUCTION

John J. Serrell, Haverford; George C. Sparks, Harleysville, and Howard M. Trowern, Jr., Willistown, all of Pa., assignors to Parke, Davis & Company, Detroit, Mich.

Division of Ser. No. 877,075, Nov. 17, 1969, which is a continuation-in-part of Ser. No. 831,557, June 9, 1969. This application Aug. 9, 1971, Ser. No. 170,050
Int. Cl. B65d *83/04*
U.S. Cl. 206—56 AB **4 Claims**



A pharmacal package wherein a pair of blister sheets are closed by respective backing sheets, the backing sheets being hingedly connected together and the blister sheets being held in adjacent relation.

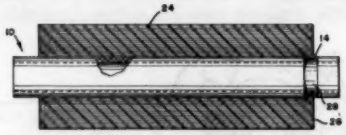
3,737,030

PREVENTION OF GAUGE BANDS IN ROLLS OF FILM

Donald F. Stewart, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,986
Int. Cl. B65d *85/67*; B65h *75/02*
U.S. Cl. 206—59 E **11 Claims**

A core used in winding plastic film provided with a compressible liner at areas of the core which tend to develop gauge bands when plastic film is wound in a roll about the core. The liner rests in an undercut portion of the core. The core is capable of preventing gauge band formation in plastic film wound thereabout.

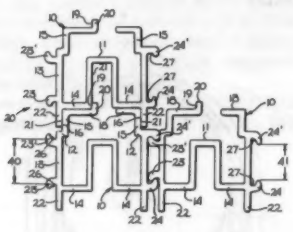


3,737,031

INTERLOCKING MAGAZINE STRUCTURE

Richard W. Carroll, Los Angeles, Calif., assignor to U.S. Industries, Inc., New York, N.Y.

Continuation of Ser. No. 3,433, Jan. 16, 1970, abandoned. This application Dec. 3, 1971, Ser. No. 204,720
Int. Cl. B65d *21/02*, *71/00*
U.S. Cl. 206—65 F **5 Claims**



An elongate magazine is adapted to contain a plurality of like electronic components. The magazine includes an elongate support section adapted for the support of the electronic components. A pair of side walls extend upward and downward from the base of the magazine and are spaced from the support section, the top portion of each side wall has an inwardly projecting panel to secure the miniaturized electronic components upon the support section, the panel having an upward projection to permit vertical nesting of like magazines. Catches extend outwardly from each side wall, the catches being adapted to horizontally engage like interlocking magazine structures.

3,737,032

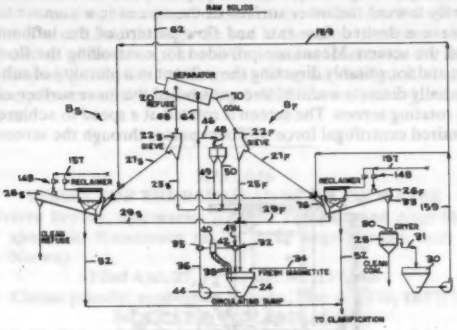
COAL PREPARATION PROCESS AND MAGNETITE RECLAIMER FOR USE THEREIN

Sherman C. Burkitt, Arlington Heights, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 28, 1971, Ser. No. 110,569
Int. Cl. B03b *7/00*; B03c *1/30*
U.S. Cl. 209—10 **21 Claims**

A coal preparation process includes a dense medium coal separator which utilizes a magnetite media for separating raw coal from refuse. A sieve receives coal from the separator and is utilized to drain a portion of the magnetite media from the coal before the coal is passed into a new magnetite reclaimer wherein paddles agitate the coal causing abrasive contact between the coal particles to dislodge the magnetite which adheres to the coal. The magnetite free coal is conveyed out of the reclaimer by a screw conveyor while the released magnetite is removed by a magnetic drum. The magnetite

removed from the coal is directed into a sump for re-use in the system. A similar process is utilized to treat the refuse so as to



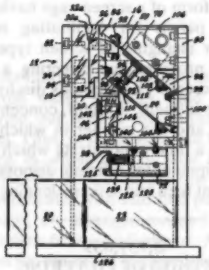
recover the magnetite which passes from the separator with the refuse.

3,737,033

PRECISION SORTING APPARATUS

John E. Toth, 13544 Orchard Gate Road, Poway, Calif., and Arthur G. Grant, 7014 Colorado Avenue, La Mesa, Calif.

Filed July 12, 1971, Ser. No. 161,735
Int. Cl. B07c *5/06*
U.S. Cl. 209—74 R **14 Claims**



A sorting apparatus which is automatic and high speed having two relatively movable parallel walls, one wall having four leaf springs connecting the wall to a housing. A micrometer positions a tapered block which in turn causes a vertical movement component of the one wall; the springs permit only an oblique movement of which one component is that vertical movement caused by the tapered block; the horizontal component which can be readily calculated, provided controllable spacing between the two walls. Solenoids are provided to allow passage of a larger item than the spacing between the parallel walls, and direct this item to a predetermined collection receptacle different from the collection receptacle receiving those items freely falling between the parallel walls which do not cause activation of the solenoids.

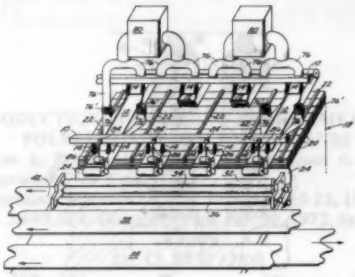
3,737,034

LUMBER UNSTACKING APPARATUS

Joseph W. Icard, Hudson, N.C., assignor to Broyhill Furniture Industries, Lanoir, N.C.

Filed Oct. 6, 1971, Ser. No. 186,842
Int. Cl. B07b *13/04*
U.S. Cl. 209—84 **23 Claims**

A stack of lumber, including a plurality of alternating layers of boards extending in parallel relationship to each other within the layer and spacer sticks extending in spaced parallel relationship to each other and substantially perpendicular to said boards, is sequentially lifted into engagement with a plurality of elongate vacuum conveyors positioned above the uppermost layer of said stack. The vacuum conveyors, which are arranged between and generally parallel to the sticks, operatively grip the uppermost layer of boards as the remainder of the stack is lowered and transport the uppermost stick layer and board layer in a direction transverse to the boards to a



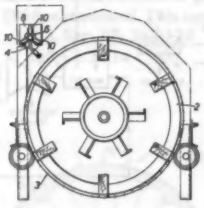
discharge station, during which time a pair of nip rolls automatically separate the sticks from the boards which are sequentially dropped from the ends of the vacuum conveyors. Broken spacer sticks are also automatically separated from unbroken or unusable spacer sticks. The conveyor are flexibly suspended above the stack to insure engagement of each vacuum conveyor with the uppermost layer of boards at points throughout their length.

3,737,035

APPARATUS FOR CLEARING THE SCREEN OF CROP-HARVESTING PRODUCT

George Allan, Peterborough, England, assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 20, 1970, Ser. No. 65,421
Claims priority, application Great Britain, Aug. 20, 1969, 41,459/69
Int. Cl. B07b *1/50*
U.S. Cl. 209—380 **2 Claims**



A pea viner comprises a screen drum for separating the crop, which passes through the drum, from the unwanted parts of the plant. The drum is cleaned, to prevent clogging, by jets of pressurized gas directed through the drum.

3,737,036

FILTER FOR POLYMER PROCESSING AND METHOD OF MANUFACTURE

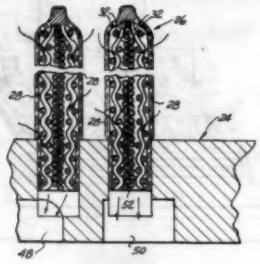
Walter Kasten, Franklin, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 67,113, Aug. 26, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,088
Int. Cl. B01d *37/00*
U.S. Cl. 210—70 **5 Claims**

A filter arrangement for a method of molten polymer processing is disclosed in which a plurality of filter elements are disposed in a filter cavity, with each element including filter surfaces aligned with the general direction of flow

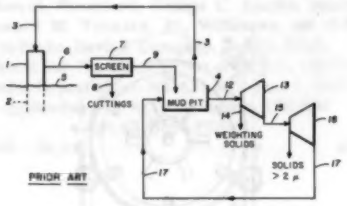
through the filter cavity, to thereby increase the effective filter surface area, and each element also including restrictive flow paths internally of the filter surface to maintain a relatively large pressure drop across the filter required for proper polymer processing in which conditioning of the molten polymer occurs to create long link molecules.

The method of manufacture includes the steps of assembling a sandwich of outer layers of a filtering mesh and inner



layers of a coarser mesh, diffusion bonding the layers together, sealing the edges, cutting the resulting sandwich in half by an electro-discharge, electron beam, laser machining, or other suitable process, pressing the open edge of each half into a respective opening in a manifold plate, and bonding each half thereto. In a preferred version of the process, the sealing step is performed by compressing the edges under a degree of pressure necessary to create cold flow of the metal, sufficient to seal and bond the periphery thereof.

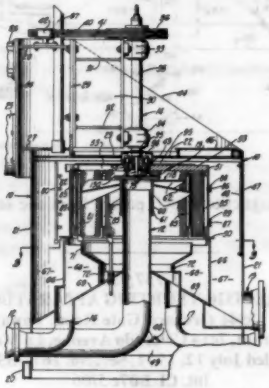
3,737,037
DRILLING FLUID TREATMENT
Lee Bone, III, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed May 3, 1971, Ser. No. 139,416
Int. Cl. E21b *21/04*
U.S. Cl. 210—73 **5 Claims**



A method for treating well drilling fluid to remove substantially all suspended solid particles wherein the drilling fluid is centrifuged to remove particles of sizes down to about 20 microns in diameter followed by adding a flocculating agent to form flocs of particles from about 20 microns to less than 2 microns in diameter, and filtering the flocs from the drilling fluid to provide a liquid substantially free of suspended solid particles for reuse as a drilling fluid.

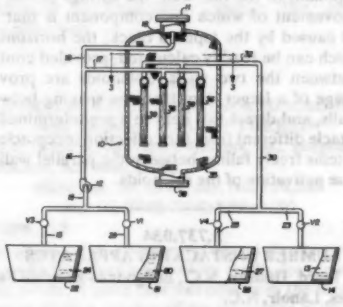
3,737,038
UP-FLOW SEPARATOR
Theodore R. Westfall, Burbank, Calif., assignor to Sweco, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 42,098, June 1, 1970, abandoned. This application June 3, 1971, Ser. No. 149,609
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 **19 Claims**

There are disclosed herein equipment and methods for screening and concentrating waste water overflow from combined sewer systems. Exemplary equipment includes a separator employing a substantially cylindrical rotating screen. Influent is piped upwardly into the equipment and deflected outwardly toward the inner surface of the screen in a manner to achieve a desired flow rate and flow pattern of the influent onto the screen. Means are provided for controlling the flow rate and for suitably directing the influent in a plurality of substantially discrete inclined streams toward the inner surface of the rotating screen. The screen is rotated at a speed to achieve a desired centrifugal force. Effluent passes through the screen



to an outlet and the remaining concentrate passes to an outlet. The screen is in the form of a screen cage having a plurality of removable screen panels for facilitating replacement of damaged screens or changing of screen type or mesh size. Cleaning means is provided for directing a cleaning fluid periodically at the screen. The methods disclosed involve the manner in which the influent, effluent, concentrate and backsplash are handled, and the manner in which the influent is screened to achieve a fluid concentrate which is pumpable to other treatment equipment for ultimate disposal. Additionally, a sequence of influent feed and screen cleaning is described.

3,737,039
METHOD OF FILTERING
Gene Hirs, Livonia, Mich., assignor to Hydromation Filter Company, Livonia, Mich.
Filed Nov. 30, 1971, Ser. No. 203,250
Int. Cl. B01d *23/24*
U.S. Cl. 210—80 **6 Claims**



This invention provides a method of and apparatus for the deep bed filtration of a liquid containing fine particles (generally on the order of less than 0.005 inches) to obtain an effluent of exceptional clarity. It has been discovered that filtration to this degree of clarity requires a compacted filter

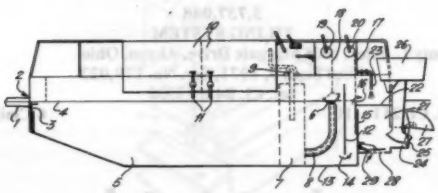
medium bed and that this bed compactness must be preserved during rejuevenation of the bed to avoid the dispersal of previously removed dirt particles throughout the filter medium. In this invention, the rejuevenation of the bed is carried out by the flow of liquid through the bed in the same direction as the direction of filtration, but at a flow rate at least twice the flow rate during filtration, while maintaining the configuration and compactness of the bed during both filtration and rejuevenation.

3,737,040

VESSEL FOR THE REMOVAL OF OIL ON WATER

Sverre Brydoy, Spireaveien 6, 3150 Tolvsrod, and Aage Sletsjoe, Joh. Wessmanns vei 7b, 3155 Asgardstrand, both of Norway

Filed Apr. 27, 1971, Ser. No. 137,888
Claims priority, application Norway, May 4, 1970, 1677/70
Int. Cl. C02b *9/02*; E02b *15/04*
U.S. Cl. 210—206 **8 Claims**



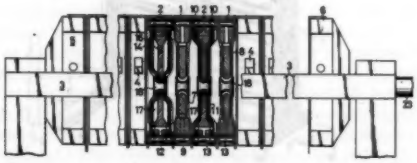
The present invention relates to an improved vessel for removing oil from water surfaces, said vessel comprising means for carrying out both a mechanical and a chemical removal of the oil. Thus, in the first part of the vessel there are means for taking in water and oil and for the separation thereof by a skimming device. In the rear part of the vessel which part communicates with said first part over an adjustable overflow means, are arranged means for spraying chemicals onto the overflow from said first part. An outlet wherein a propulsion means for the vessel is placed, is located in the rear part thereof.

3,737,041

FILTER PRESS

Susumu Kitajima, and Katsutami Shibasaki, both of Osaka, Japan, assignors to Kurita Machinery Manufacturing Company, Limited, Osaka, Japan

Filed Dec. 20, 1971, Ser. No. 209,906
Int. Cl. B01d *25/00*
U.S. Cl. 210—228 **3 Claims**



A pressing fluid chamber to be supplied with a pressure fluid is formed between each stretchable airtight sheet having a filtering face and each core plate covered with the sheet to squeeze cake in a filtering chamber by inflating the sheet. A filtrate discharge channel in the core plate communicates with an opening in the filtering face of the sheet at the portion where the sheet is prevented from inflation by the adjacent filter plate to permit filtrate to directly flow into the filtrate discharge channel through the opening.

3,737,042

PRODUCTION OF IMPROVED SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 30,846, April 22, 1970, Pat. No. 3,699,038. This application Jan. 20, 1972, Ser. No. 219,576
Int. Cl. B01d *13/00*
U.S. Cl. 210—321 **32 Claims**

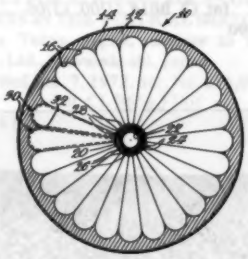
A member cast in the form of either a hollow filament or a flat film formed of a polybenzimidazole polymer and possessing reverse osmosis properties is subject to an annealing process by contacting the membrane with an organic liquid under conditions found capable of substantially enhancing the properties of the same. These polybenzimidazole membranes find particular utility in reverse osmosis desalination procedures. The annealing step of the present process substantially improves the performance of the membranes in such a separation.

3,737,043

MEMBRANE MODULE

George B. Clark, Waukesha, Wis., assignor to Aqua-Chem, Inc., Midland, Mich.

Continuation-in-part of Ser. No. 97,136, Dec. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 781,892, Dec. 6, 1968, abandoned. This application June 12, 1972, Ser. No. 262,124
Int. Cl. B01d *13/00*
U.S. Cl. 210—321 **20 Claims**



A compact membrane module for use in reverse osmosis processes having a plurality of membrane cell structures located in close adjacency so that when the module is in use, adjacent membrane structures tend to support each other against the high pressures customarily encountered in reverse osmosis processes thereby minimizing the amount of high pressure resistant material required.

3,737,044

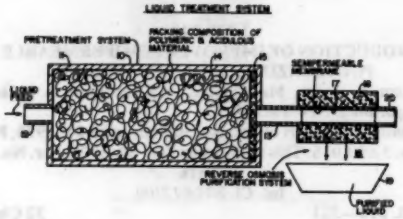
LIQUID TREATMENT SYSTEM FOR HIGH PH WATER

Richard M. Chamberlin, McKeesport, and Regis R. Stana, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 058,788, July 28, 1970, Pat. No. 3,684,094. This application Apr. 6, 1972, Ser. No. 241,811

Int. Cl. B01d *39/04*

U.S. Cl. 210—501 **11 Claims**



A packing composition effective to reduce the pH of alkaline liquids, used as a pretreatment, in association with a reverse osmosis membrane and support in a liquid treatment system, is made of an encapsulating matrix of polymeric material that is essentially water impermeable at a pH between about 4.5 and 8 and which becomes significantly water permeable at a pH above about 9, and an acidulous material which is encapsulated by the matrix at a pH between about 4.5 and 8, and released progressively from the matrix at a pH above about 9.

3,737,045

MEMBRANE FOR USE IN DIALYSIS AND ULTRAFILTRATION AND THE PRODUCTION OF SUCH MEMBER

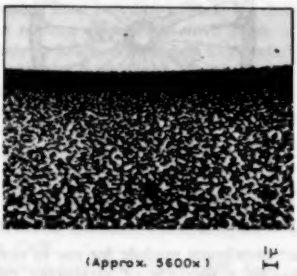
Koichi Hashimoto, Tokyo, and Hideko Kishida, Kashihara, both of Japan, assignors to Ulvac Corporation, Chigasaki-shi, Kanagawa-ken, Japan

Filed July 8, 1970, Ser. No. 53,221

Claims priority, application Japan, Dec. 20, 1969, 44/102118

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—490 **27 Claims**



This invention relates to a membrane suitable for use in dialysis processes and ultrafiltration processes to separate, concentrate or purify a substance of a molecular weight of 500 to 20,000, heretofore difficult to be treated by the various known types of dialysis membranes or ultrafiltration membranes. The membrane of the invention is characterized by its higher water flow rate and by the anisotropy of its structure made of an ionically cross-linked polymer of a polycation with a polyanion; the structure comprising a continuous and dense microporous top surface layer with an estimated averate pore diameter of about 10 to 120 angstroms and a lower, integral microporous reinforcing layer containing micropores of larger pore diameters, said membrane being supported by a porous layer of a polyolefin or polyamide. The membrane may be produced by applying to a porous supporting sheet a thin liquid film of an aqueous-organic solution containing both a polycation and a polyanion together with an inorganic sodium or calcium salt, then treating the film so as to increase the dielectric constant value in its top surface, washing the film in a water bath under controlled conditions and repeating operations of subsequent rinsing and drying the film.

3,737,046

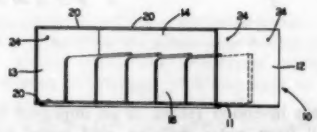
FILING SYSTEM

Monty L. Jeter, 1008 Margate Drive, Akron, Ohio

Filed Sept. 9, 1971, Ser. No. 179,023

Int. Cl. B42f *17/00*

U.S. Cl. 211—10 **6 Claims**



Shelving for open shelf filing of papers, preferably in file folders, has end faces and partitions extending from front to rear at an angle such as 45° to the front.

3,737,047

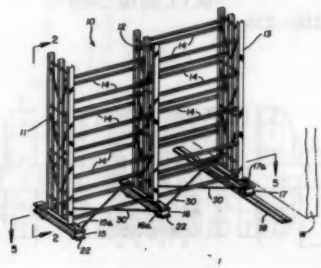
STORAGE SYSTEM FOR SINGLE GUIDE MEANS

John E. Ruth, 171 Belhar Drive, Akron, Ohio

Filed Apr. 25, 1971, Ser. No. 137,308

Int. Cl. A47f *5/00*

U.S. Cl. 211—162 **1 Claim**



This invention relates to a storage system of the type wherein maximum storage efficiency is obtained by utilizing a

plurality of parallel storage units that can shift transversely so as to permit access to any given storage unit while still utilizing the available space to the maximum extent possible.

The improvement consists of eliminating safety hazards normally connected with such equipment by eliminating the outer guide means normally provided and by specially reinforcing the individual storage units to rigidify the same against lateral deflection at the outboard end.

3,737,048

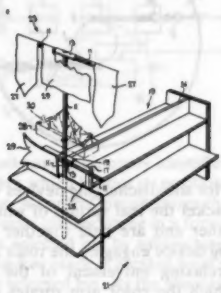
VERSATILE NON-SELF-SUPPORTING ASSEMBLY FOR DISPLAY PURPOSES

Gerald L. Giroux, Toronto, Ontario, Canada, assignor to Kraftco Corporation, Chicago, Ill.

Filed May 26, 1971, Ser. No. 147,036

Int. Cl. A47f 5/14

U.S. Cl. 211—182 **6 Claims**



An erectible non-self-supporting versatile assembly for product display and advertisement purposes includes a connector to hold together a plurality of poles and a bracket to support the assembly on a supporting body.

3,737,049

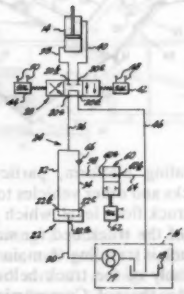
STEP VOLUME CONTROL

Stanley E. Farmer, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Mar. 19, 1971, Ser. No. 126,230

Int. Cl. B66c 23/54

U.S. Cl. 212—35 R **5 Claims**



A step volume control affording control over the rate at which fluid under pressure is supplied to a pressure fluid-operated instrumentality. Fluid is supplied under pressure in multiple flow paths, with the flow rate in such paths having a predetermined proportionate relationship. The fluid in such flow paths is directed into a common inlet port of a main control valve. The control valve is connected to the pressure fluid-operated instrumentality, and with the valve open, fluid flowing into the inlet port is directed to the instrumentality. Selectively operated means is provided for diverting pressure fluid flowing in at least one of said flow paths, whereby such fluid bypasses the main control valve to be recirculated directly back to the source of pressure fluid. The control valve, and selectively operated means, may be remotely electrically controlled.

3,737,050

WIRE MANUFACTURE

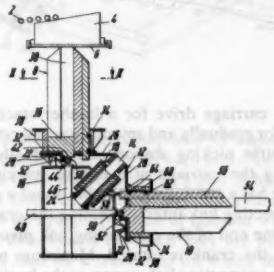
Kurt Leeuwestein, Duisburg-Neudorf, Germany, assignor to Friedrich Kocks, Dusseldorf, Germany

Filed Aug. 19, 1971, Ser. No. 173,075

Claims priority, application Germany, Aug. 19, 1970, P 20 41 179.4

Int. Cl. B66c 1/66

U.S. Cl. 214—1 BD **9 Claims**



An apparatus is provided for collecting wire bundles from a rod mill and discharging them in a horizontal direction which apparatus includes a vertically disposed guide receiving rod or wire loops from a path and selectively delivering bundles to one of an even number of mandrels on a common frame rotatable about an inclined axis, the mandrels being rotatable from a first position vertically below the guide and receiving bundles therefrom to a second generally horizontal discharge position, each mandrel having a bundle remover displaceable longitudinally of the mandrel.

3,737,051

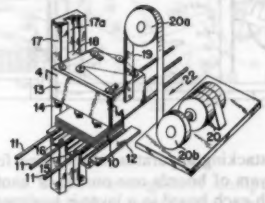
APPARATUS FOR ALIGNING EDGES OF STACKED SHEETS IN THE VERTICAL DIRECTION

Shigeo Horino, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 7, 1972, Ser. No. 216,063

Int. Cl. B65g 57/00

U.S. Cl. 214—6 S **16 Claims**



In apparatus for aligning edges of stacked sheets in the vertical direction there are provided a supporting member for supporting a stack of sheets, a casing movable toward and away from the supporting member, a rectangular frame contained in the casing, the rectangular frame including four side plates

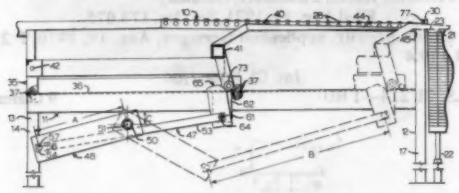
adapted to face four side surfaces of the stack, means for adjusting inwardly and outwardly at least two adjoining side plates to vary the internal area of the rectangualr frame, and means for vibrating at least two adjoining side plates in directions perpendicular thereto for aligning the edges of the stack of sheets in the vertical direction.

3,737,052

CARRIAGE DRIVE FOR LUMBER STACKER

Sidney L. Lunden, Spokane, Wash., assignor to Moore-Iem, Inc., Spokane, Wash.

Filed Jan. 3, 1972, Ser. No. 214,727
Int. Cl. B65g *57/10*
U.S. Cl. 214—6 DK **8 Claims**



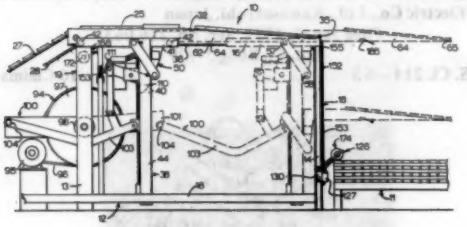
A crank carriage drive for a lumber stacking machine is described for gradually and smoothly accelerating the carriage from a course picking station and gradually and smoothly decelerating the carriage at a course stacking station. The crank drive has a crank arm rotatable about a crank axis and a crank connecting link interconnecting the crank arm and the carriage. One end of the connecting link pivots about a wrist pin axis as the crank is rotated. Maximum pivotal displacement of the connecting link occurs at the beginning and at the end of the forward stroke of the drive. A mechanism is provided that is responsive to the pivotal movement of the connecting link about the wrist pin axis to, (1), raise a course support means at the course pickup station to pick up a course, (2), carry the course to the course stacking station and, (3), lower the course at the stacking station.

3,737,053

LUMBER STACKING APPARATUS

Sidney L. Lunden, Spokane, Wash., assignor to Moore-Iem, Inc., Spokane, Wash.

Filed Jan. 3, 1972, Ser. No. 214,725
Int. Cl. B65g *57/26*
U.S. Cl. 214—6 DK **8 Claims**



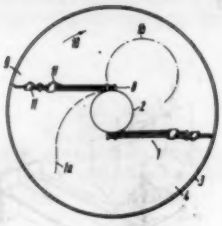
A lumber stacking apparatus is described for successively depositing layers of boards one on top of another to form a stack in which each board in a layer is horizontally spaced to enable the boards to be efficiently dried in a subsequent drying operation. The apparatus has a forked layer support means with projecting arms that receive and successively transport the layers over a stacking station and in front of a stripping means. The arms are lowered over the stack and then pulled back past the stripping means to strip the layer from the arms and onto the stack. The stripping means has an abutment surface that is inclined to shift the layer sideways as the arms are pulled back to space the boards as they are dropped from the arms.

3,737,054

ROTOR ARM FOR SILO DISCHARGING DEVICES

Hans Gessler, Aalen/Wurttemberg, Germany, assignor to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung, Wasseralfingen/Wurttemberg, Germany

Filed June 8, 1971, Ser. No. 151,112
Claims priority, application Germany, June 12, 1970, P 20 28 901.4; Feb. 4, 1971, P 21 05 134.3
Int. Cl. B65g *65/48*
U.S. Cl. 214—17 D **28 Claims**



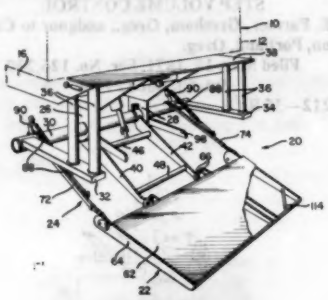
A rotor arm for silo discharging devices which is formed by a leaf spring packet the leaf springs of which are slidably engaging each other and are held together by holding means while a damping device engaging the rotor arm is provided for damping the relaxing movement of the rotor arm in the direction in which the rotor arm rotates during its working operation.

3,737,055

STORABLE ELEVATING PLATFORM

Charles A. Pettit, 20011 Bernist Avenue, Torrance, Calif.

Filed May 4, 1971, Ser. No. 140,150
Int. Cl. B60p *1/44*
U.S. Cl. 214—77 P **13 Claims**



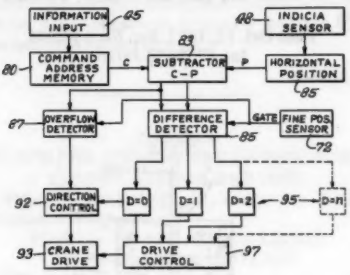
Storable elevating platform, particularly useful for attachment to trucks and other vehicles to raise and lower loads with respect to truck floor level, which platform can be tilted under the floor of the truck bed for storage when in nonuse and when the truck is traveling. A main support tube is rigidly secured transversely of the truck below the truck floor and forward of the edge thereof. Compression arms are pivoted to the platform and around the main support tube. Tension members having chain links, at least at the ends thereof, wrap around the main support tube and cam lobes on the platform. As the compression arms are raised, the tension members retain the platform substantially level. The platform is pivoted to the compression arms to permit the platform to be folded up and forward under the truck floor when not in use.

3,737,056

PLURAL NUMBER CONTROL SYSTEM FOR AN AUTOMATIC WAREHOUSE

James S. Hathcock, Jr., Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

Continuation of Ser. No. 810,494, March 26, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,397
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 5 Claims



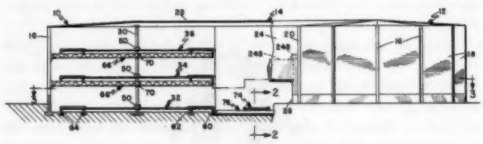
Each bin in a warehouse is uniquely identified by a binary coded decimal number which locates its position with relation to the remaining bins. A control circuit stores the address of a selected bin and moves a stacker crane in a forward or reverse direction toward the selected bin by subtracting a sensed address at which the stacker crane is located from the stored address identifying the selected bin. As the absolute value of the subtracted difference approaches zero, the stacker crane speed is slowed, and finally stopped when the subtractor reaches zero. The sensed address also controls fine positioning of the crane and various gating for the control circuit.

3,737,057

MULTI-LEVEL AUTOMATIC STORAGE AND RECOVERY SYSTEM FOR AIRCRAFT

Malcolm A. Neumann, San Diego, and Arnold Hunsberger, Dellzura, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Division of Ser. No. 45,310, June 11, 1970, Pat. No. 3,675,378. This application June 26, 1972, Ser. No. 266,269
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 A 31 Claims



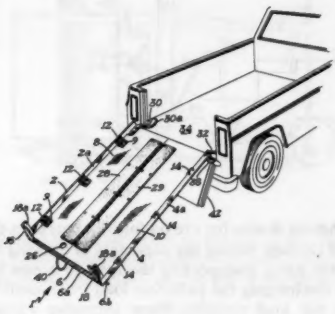
A storage facility having a plurality of multi-level, non-rotatable, support frames, and rotatable spider frames with circumferentially spaced aircraft storage stalls peripherally supported on the support frames for communication with an elevator that has a turntable for aligning an aircraft with a selected stall, and individual, aircraft-carrying, wheeled pallets being moved by a power tractor on rails by an automatic control system to and from an external loading dock to and from the selected stalls in a series of sequential steps that are initiated by coded signals identifying each aircraft with each stall.

3,737,058

LOADING RAMP FOR TRUCKS AND TRAILERS

Jerold E. Johnson, Route 1, Box 143, Aitkin, Minn.

Filed Mar. 9, 1972, Ser. No. 233,138
Int. Cl. B65g 67/02
U.S. Cl. 214—85 10 Claims



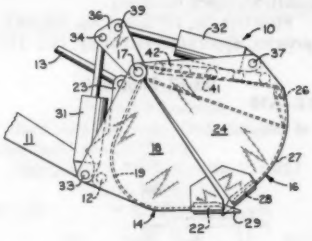
A loading ramp for vehicles comprised of a generally U-shaped frame assembly open at its forward end which engages the rear edge of a truck bed and having a pair of hinged ramp panels swingable from an inwardly and downwardly folded position of use to an upright position of non-use wherein the panels and the frame beams to which they are hingedly attached straddle a load on a truck bed on which the ramp is stored.

3,737,059

BUCKET ARRANGEMENT

Robert A. Peterson, San Leandro, and Donald H. Stroot, Castro Valley, both of Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 22, 1971, Ser. No. 117,314
Int. Cl. E02f 3/70
U.S. Cl. 214—145 5 Claims



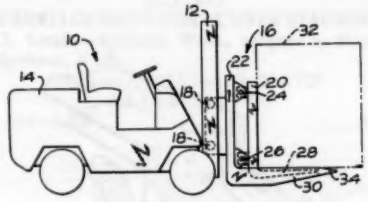
A multi-purpose bucket arrangement comprises a first bucket portion and a second or cover bucket portion pivotally mounted thereon. A pair of hydraulic cylinders are operatively connected to the bucket portions to normally pivot the second bucket portion relative to the first one. The rod ends of the cylinders are pivotally connected to the distal end of a lever mounted on the pivotal connection for the bucket portions.

3,737,060

SELF-LOADING/UNLOADING LIFT TRUCK CARRIAGE

Walter M. Shaffer, Chesterland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Filed July 12, 1971, Ser. No. 161,647
Int. Cl. B60p *1/02*
U.S. Cl. 214—514 7 Claims



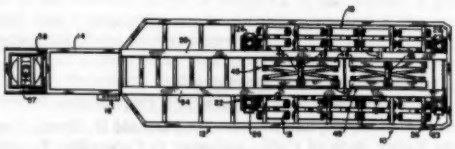
An attachment device for use on fork-lift trucks in the form of an orbital carriage having the capability of drawing a palletless load onto itself, transporting the load to a new location and thence discharging the palletless load from itself, with no damage to the load resulting from excessive vibration or squeezing during the drawing, transporting, and discharging cycle.

3,737,061

STORAGE UNIT AND TRAILER BODY COMBINATION

Nick P. Glumac, Rural Route 2, Box 386, Chesterton, Ind.

Filed Oct. 21, 1970, Ser. No. 82,583
Int. Cl. B60p *1/02*, *1/64*
U.S. Cl. 214—512 2 Claims



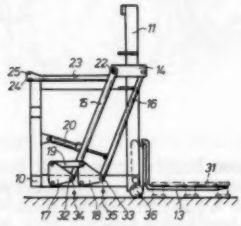
There is disclosed a unique truck trailer body having liftable features and a removable storage unit for transport thereby.

3,737,062

WHEELED VEHICLE

Gerhard Schnell, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 20, 1971, Ser. No. 190,943
Claims priority, application Germany, Oct. 21, 1970, P 20 51 585.9
Int. Cl. B66f *9/10*
U.S. Cl. 214—670 9 Claims



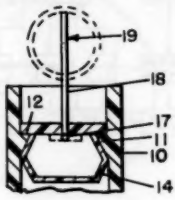
A substantially constant C-shaped chassis can travel in a first direction and has an open side facing transverse thereto. An upright mast is mounted within the confines of the chassis and can be shiftably displaced in a second direction transverse to the first direction towards and away from the open side. A load-lifting device is provided on the mast, and a displacing arrangement is associated with the mast and with the chassis for displacing the mast with reference to the chassis between the aforementioned positions.

3,737,063

CONTAINER HAVING A SAFETY STOPPER

Raymond M. Loup, 200 Jameson Avenue, Toronto, Ontario, Canada

Filed Oct. 12, 1971, Ser. No. 187,944
Int. Cl. B65d *39/16*
U.S. Cl. 215—9 3 Claims



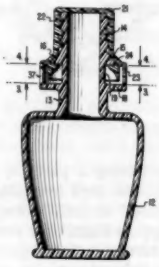
This invention consists of a glass or plastic container of any desired size and shape having a vertically disposed neck in which is located a peripheral flange that is triangular in cross-section and whose short side is a horizontally disposed ledge on which is placed the horizontally disposed disk of a stopper that cannot be removed from the neck of the aforesaid container without the use of a key, as will hereinafter be described. The hollow stopper which is made of flexible plastic or the like has a basic side configuration of a deformed hexagon.

3,737,064

PILFER-PROOF CLOSURE FOR CONTAINERS

Chandrakant Somabhai Patel, and Rashmikant Somabhai Patel, both of 19, Sampatrao Colony, Baroda, India

Filed May 17, 1971, Ser. No. 144,067
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 11 Claims



A pilfer-proof closure for use in combination with a container having a threaded neck portion and an annular flange

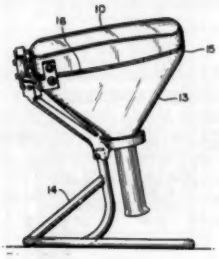
below the threaded portion, comprising a body having an internally threaded upper portion and a lower skirt portion. A flexible locking member attached to the inside of the body by frangible connecting means and protected by the skirt is adapted to slide over the container flange as the cap is threaded on whereby the locking member snaps into place underneath the flange to lock the closure onto the container. When the closure is unthreaded from the container, the frangible connecting means are broken to completely disconnect the locking member from the inside of the closure. A viewing opening in the lower portion of the body permits visual observation of the locking member when the closure is threaded on the container to determine whether or not the container has been tampered with.

3,737,065

ENVELOPE FOR, AND METHOD OF PROCESSING, A COLOR CATHODE-RAY TUBE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 28, 1971, Ser. No. 138,073
Int. Cl. H01j *61/30*; H01k *3/22*
U.S. Cl. 220—2.1 A **6 Claims**



In one step of the screening process, the shadow mask of a color tube is mounted from studs provided in the faceplate section. The faceplate is then introduced into an exposure chamber where it is supported at three points spaced along the sealing land near the locations of the support studs. This establishes the faceplate in a reference mode, free of twisting moments and elastic deformation. When the screening process is completed, the faceplate is superposed over the enlarged end of the funnel section of the tube envelope and supported therefrom at three spaced points similarly disposed along the sealing land of the funnel to engage the faceplate at the same spaced points of support effective in the exposure step. This re-establishes the faceplate in its reference mode. Frit sealing material is disposed between the sealing lands of the envelope sections and the assembly is heated to seal the faceplate and funnel to one another along the entirety of the sealing lands.

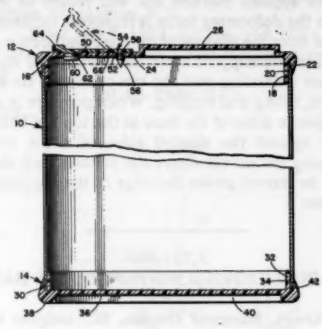
3,737,066

CONTAINER CONSTRUCTION

John B. Ames, Box 670, Marion, Ala.

Filed Sept. 15, 1971, Ser. No. 180,545
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 S **4 Claims**

A dispensing container comprising a generally sleeve-shaped main body of cardboard or the like, and top and bottom plastic plugs which are interfitted with the opposed ends of the container and bonded thereto. The top plastic plug has mounted thereon a dispensing lid formed with a living hinge



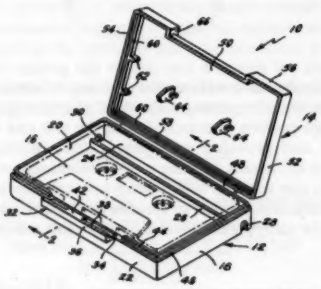
for closing a discharge opening formed in the top plug. The top and bottom plugs are constructed and arranged to permit stacking of the containers, one on top of the other.

3,737,067

PLASTIC BOX HAVING INTEGRALLY MOLDED LATCH

Richard C. J. Palson, Medfield, Mass., assignor to A. J. Krajewski Manufacturing Company, Cranston, R.I.

Filed Feb. 22, 1971, Ser. No. 117,580
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **1 Claim**



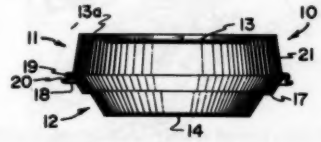
A plastic box including a base and cover molded in a unitary construction and having an integrally molded latch that has a projection formed thereon, the latch being pivotally movable when the base and cover are moved to the closed position thereof to lock the base and cover together.

3,737,068

PIE CONTAINER

Stanford W. Bird, Salt Lake City, Utah, assignor to Plastronics Corporation, Salt Lake City, Utah

Filed June 17, 1971, Ser. No. 154,027
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 **4 Claims**



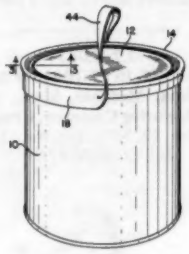
A container having a base and a lid which are capable of being releasably coupled at their outer circumferences. The

base and lid are constructed of a lightweight, semi-rigid material. The base is deformable, within limits, in response to the pressure applied thereon but will return to its original shape when the deforming force is removed. Inclined, stepped sides extend from the bottom of the base and form a plateau to accommodate and support a pie tin and to hold the edges of the container extending past the rim of the pie tin away from the pie crust, filling and topping. When pressure is applied to depress opposite sides of the base at the top the base deforms to squeeze against the slanted sides of a pie tin therein, thereby raising the pie tin above the plateau such that a users fingers can be moved under the edge of the pie plate to lift it from the base.

3,737,069
CONTAINER CARRIER WITH INTEGRAL HANDLE LOOP

Ronald C. Owen, Harwood Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 15, 1970, Ser. No. 54,977
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **4 Claims**

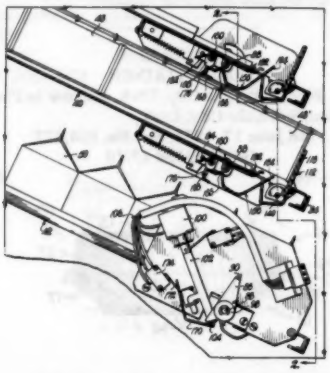


A can or similar container for a variety of contents, including paints, and comprising a sleeve of plastic material with its upper edge portion interlocked with the can end and closure assembly and provided with substantially horizontal semi-cylindrical slit means forming a semi-cylindrical strap portion below the can top and which strap portion may be stretched over the adjacent portion of the sleeve and can top to provide a handle for carrying or otherwise supporting the can.

3,737,070
INCLINED SHELF VENDING MACHINE

Wilbert O. O'Neal, Independence, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed May 20, 1971, Ser. No. 145,234
Int. Cl. G07f *11/28*
U.S. Cl. 221—6 **5 Claims**

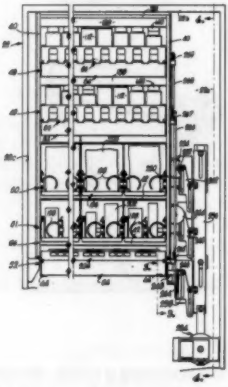


A slant-shelf type article dispensing or vending machine having a plurality of selectable shelves and adapted to dispense articles successively from various sections of any selected shelf is provided with improved structure for retaining and releasing articles from the sections of the shelves and for disabling particular shelves when a sold-out condition is sensed relative to any section of such shelf. The article retaining and releasing structure is normally locked against movement to release an article by external forces applied directly to an article-blocking member such as may occur during attempted pilferage, and means are provided for positively shifting the blocking member to an article-releasing position when authorized dispensing of an article is desired. The sold-out structure includes means for sensing the presence of an article in position to be dispensed for each section of each of the shelves and means for successively enabling only those sensing means associated with the particular section of each of the shelves from which an article is next to be dispensed.

3,737,071
PRODUCT DISPENSING APPARATUS

Elmer Bradley Offutt, Independence, Mo., and Edward Babich, Kansas City, Kans., assignors to The Vendo Company, Kansas City, Mo.

Filed Mar. 17, 1972, Ser. No. 235,489
Int. Cl. B65g *59/00*
U.S. Cl. 221—129 **24 Claims**



A general merchandising machine adapted to handle a variety of products has horizontal product dispensing modules provided with removable product trays and a series of selectively operable ejector mechanisms below each tray for forcing a selected, next-to-vend product at an ejecting station above the corresponding mechanism and out of its product row in the tray for gravitation to a vending station. A spring-loaded product pusher for each product row exerts constant pressure on the products in the row to present a new product to the ejecting station after each ejection of the next-to-vend product, and a latch for each pusher is designed to hold the latter away from the ejecting station during loading of the withdrawn tray and to release the pusher as the tray is reinserted into the machine. An auxiliary flipper on certain of the trays assures that the selected product is completely ejected from its tray.

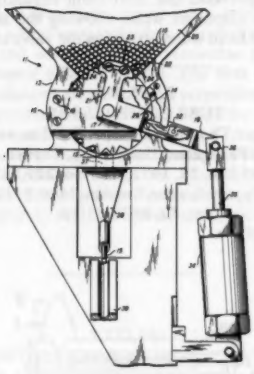
3,737,072
FEEDING DEVICE FOR CYLINDRICAL TUBING

Rollin E. Deitrick, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,271
Int. Cl. B65h *3/60*
U.S. Cl. 221—203 **2 Claims**

A device for periodically feeding workpieces such as tubing to a preselected location includes a cylindrical wheel having a

plurality of circumferentially spaced teeth thereon. A cam overlies the wheel and engages the upper periphery of the teeth. As tubing is fed to the wheel from an overlying trough,



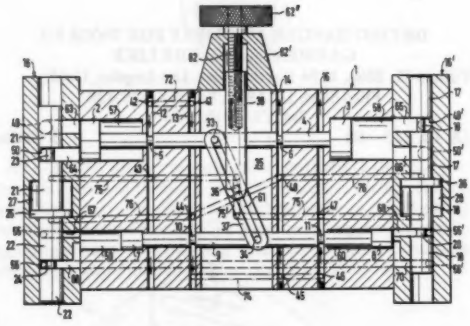
the wheel is rotated so that the tubing is received in the exposed spaces between the teeth of the wheel. Simultaneously, the cam is reciprocated to agitate the overlying tubing into the exposed spaces between the teeth of the wheel.

3,737,073

APPARATUS FOR PROPORTIONALLY DOSING A PLURALITY OF LIQUIDS

Rosemarie Lupert, Eggli 1040, Abtwil, Switzerland

Filed Jan. 31, 1972, Ser. No. 221,908
Claims priority, application Austria, Feb. 5, 1971, A 994/71
Int. Cl. B67d *5/46*
U.S. Cl. 222—134 **10 Claims**



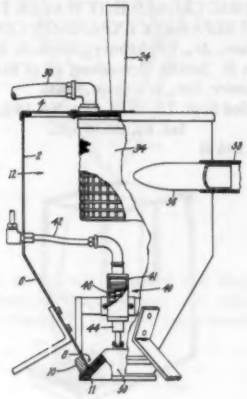
A proportionating dosing device has two pairs of pistons, each pair being mounted on the respective ends of a common piston rod. The piston rods are parallel and are coupled for movement in opposite directions by a two-armed lever whose fulcrum may be shifted to vary the ratio of the arms and thereby of the respective strokes of the piston pairs. The two cylinders receiving the pistons of each pair are connected with a common intake nipple and a common discharge nipple and controlled by pneumatically actuated valves, the pneumatic valve actuating circuits including conduits blocked and opened by the moving piston rods in proper sequence. Because of the wide available ratio of liquid discharge rates, the apparatus is suitable for metering resin compositions and curing agents for the same to an injection molding machine.

3,737,074

APPARATUS FOR FEEDING PARTICULATE MATERIAL

Leonard J. L. Davies, Kettering, England, assignor to USM Corporation, Flemington, N.J.

Filed July 8, 1971, Ser. No. 160,588
Claims priority, application Great Britain, July 23, 1970, 35,642/70
Int. Cl. B65g *53/50*
U.S. Cl. 222—193 **3 Claims**



Apparatus including a substantially closed chamber having an inlet connected to a supply of granular material and an outlet for dispensing the material from the chamber, a valve for opening and closing the outlet, and a device for drawing air from the chamber when the valve is closed so a stream of air is drawn through the inlet to feed material to the chamber from the supply.

3,737,075

MULTI-COMPARTMENTAL CONDIMENT SHAKER

Oscar J. Atchley, P.O. Box 147, Evansville, Ill.

Filed May 26, 1971, Ser. No. 147,129
Int. Cl. A47g *19/24*
U.S. Cl. 222—142.9 **5 Claims**

A multi-compartmental cylinder having open top and bottom ends and complemental integral core means providing selectively usable condiment compartments. An attachable disc-like closure normally spans and closes the bottom ends of the compartments and is removable for replenishing the com-

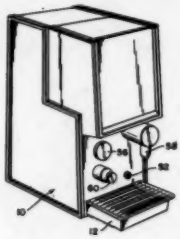
partments. Cap-type domical cover means is rotatably mounted on and covers the top of the cylinder. This cover means embodies manually regulable dispensing ports controllable by an adjustable shutter-type valve. This cover means can be turned in either direction so that the available discharge ports can be registered with a selected compartment, after which the pivoted shutter can be shifted and set to wholly or partially discharge the selected condiment.

3,737,076

ATMOSPHERIC CLOSED HOT WATER TANK SYSTEM WITH SEPARATE EXPANSION CONTROL

John A. Gardner, Jr., Tewksbury; Merle S. Brown, Cohasset, and William H. Jacobs, Brookline, all of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Sept. 13, 1971, Ser. No. 180,031
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 H **10 Claims**



This invention relates to dispensers which require a source of hot water and more particularly comprises a hot beverage dispenser having a new and improved hot water heating system.

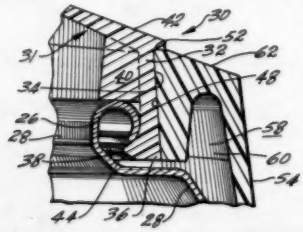
Most commercial hot water sources do not provide water at a high enough temperature so that it may be mixed with other ingredients in a food dispenser and be served directly without supplemental heating. Consequently some form of hot water heater is used in combination with a holding tank in most hot water systems. The systems take a number of different forms; for example, they may employ a closed or open tank, and those systems which use a closed tank may either be pressurized or unpressurized. All of the various sytems used heretofor have certain disadvantages which are described below.

3,737,077

MEANS FOR ATTACHING A DISPENSING VALVE TO A PRESSURIZED DISPENSER WITH A LOCK RING

Roger K. Bruce, 26682 Avenida Deseo, Mission Viejo, Calif.; Werner Marhold, 20032 Port Circle, Huntington Beach, Calif., and Cecil F. Adickes, 8128 Calabar Avenue, Playa Del Rey, Calif.

Filed Feb. 10, 1971, Ser. No. 114,217
Int. Cl. B67b *3/00*
U.S. Cl. 222—153 **10 Claims**



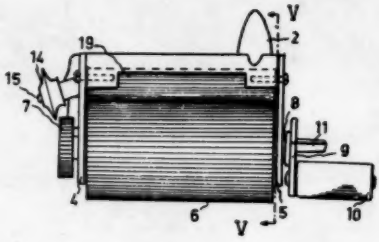
A dispensing valve has a skirt with an internal annular flange for receipt over a bead in the dome of a standard pressurized dispenser. The external axially extending surface of the skirt is tapered and the top of the skirt is capped by an annular external flange. A lock ring having an internal taper complementing that of the skirt is adapted to be received over the skirt's taper and locked in place by the external flange. The lock ring prevents the skirt from expanding under the pressure of the dispenser while allowing the skirt to be expanded over the bead when attaching the valve to the dome.

3,737,078

TUBE COMPRESSOR

Karl Oskar Birger Thoren, Vadstena, Sweden, assignor to Olaf Thoren Narra Parkgatan, Huskvarna, Sweden

Filed Feb. 28, 1972, Ser. No. 229,717
Claims priority, application Sweden, Mar. 1, 1971, 2551/71
Int. Cl. B65d *35/28*
U.S. Cl. 222—192 **10 Claims**



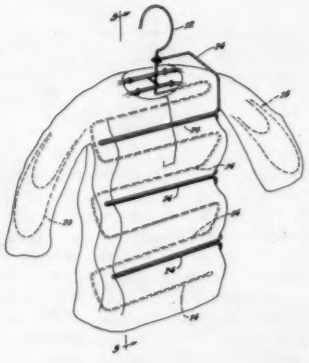
An apparatus mainly characterized as a compressor for collapsible tubes but also serving as a can opener has pressing members forced together and separated by an arrangement used for forcing a slitter and a feeder of a can opener to and fro each other.

3,737,079

DRYING HANGER ASSEMBLY FOR WOOLEN GARMENTS, AND THE LIKE

William W. Bliss, 1756 North Fuller, Los Angeles, Calif.

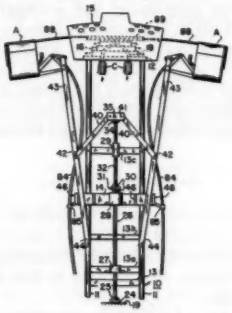
Filed Sept. 10, 1971, Ser. No. 179,438
Int. Cl. A41h *5/00*
U.S. Cl. 223—68 **5 Claims**



A drying hanger assembly is provided for supporting garments, such as woolen sweaters, and the like, which absorb

relatively large amounts of water when washed, and which are relatively heavy when wet. The assembly of the invention is constructed so that the garment is supported essentially along its entire length so that there is no tendency for the fabric to stretch, as would otherwise be the case, due to the weight of water absorbed into the material. The assembly, in one of its embodiments is a wire-formed two-piece compatible device which includes a first section having essentially a coat hanger configuration and which includes extensible shoulder loops and a hook-shaped support means. The first section of the aforesaid embodiment also includes a serpentine-shaped inner wire-formed member which extends down the interior of the supported garment. The assembly of the aforesaid embodiment also includes a serpentine-shaped second section which fits over the external surface of the supported garment, and which serves to hold the garment in place over the first section so that it is supported essentially continually along its length.

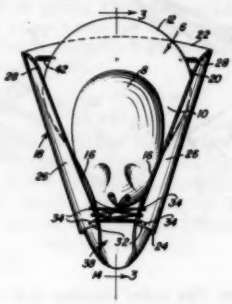
3,737,080
SHORT SLEEVE PRESSER EXPANDER
August F. Paris, 1415 McCullough Avenue, Brockway, Pa.
Filed July 7, 1971, Ser. No. 160,273
Int. Cl. A41h *5/00*
U.S. Cl. 223—70 20 Claims



An expander presser apparatus for short sleeve shirtlike garments is provided having a pair of telescopic spring-tension-expanded sleeve-pressing assemblies that are retractably mounted to extend from armpit positions of a garment-receiving upright frame of a finishing machine that has a permeable fabric form into which steam and dry air are introduced.

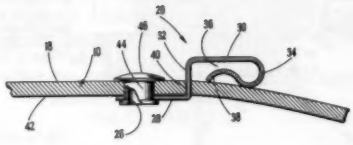
3,737,081
HAT SUPPORT
Frank R. James, Comanche, Okla., assignor to Western Hat Corral Co., Comanche, Okla.
Filed Oct. 6, 1971, Ser. No. 187,085
Int. Cl. D06c *15/00*
U.S. Cl. 223—84 7 Claims

A holding, storing and shape-maintaining device for a western hat embodying, as usual, a high crown encompassed by a contoured brim having forward and rearward down-bent end portions and longitudinal side portions bordered with forwardly converging inwardly curled edge portions. This device comprises a panel whose truncated triangulate body portion supportively seats the crown-equipped brim. The longitudinal edge portions of the panel are provided with turned-in overhanging flaps in which the curled edge portions are con-



formingly nested, retentively sheathed and shaped. Forward upper corner portions of the flaps are adjustably laced together to retain the hat in a captive but manually removable state.

3,737,082
WATCHBAND
Samuel Millman, 11 Florence Avenue, Revere, Mass.
Filed May 28, 1970, Ser. No. 41,466
Int. Cl. A44c *5/14*
U.S. Cl. 224—4 E 2 Claims

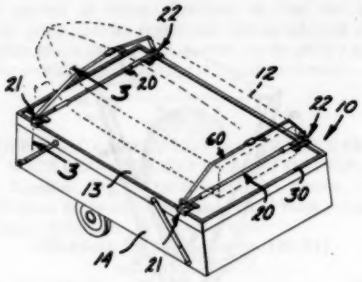


A watchband or the like including special clips secured to the band for gripping and retaining the watch on the band. Each of the clips includes, at one end, a resilient reverted loop which receives one of the mounting pins on the watch case. The clips are secured at their other ends to the watchband by offset mounting tabs which pass through slots in the band. The offset tabs are secured toothe underside of the band by a rivet which passes both through the band and the offset tab.

3,737,083
BOAT CARRIER FOR USE ON RECREATIONAL VEHICLES
Kerry G. Lund, St. Paul, Minn., assignor to Pic-A-Tent-Top Carrier, Inc., St. Paul, Minn.
Filed May 20, 1971, Ser. No. 145,159
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 H 5 Claims

A boat carrier for use on the top of tent trailers, campers, and the like having a rotatable and carrier or roller member to facilitate loading of the boat. The roller member is rotatably

supported by two laterally spaced, vertical support members each of which removably engages a base plate screwed to the



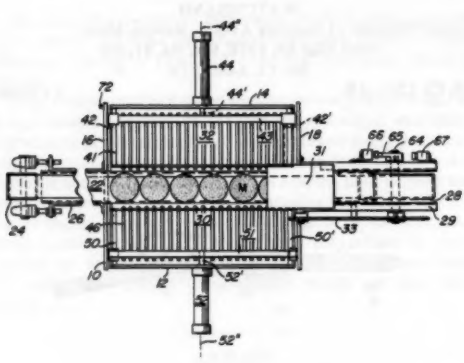
top of the cover. The roller member and vertical support members are readily removed from the cover top when the carrier is not in use.

3,737,084

AUTOMATIC MUFFIN TINING MACHINE WITH ADJUSTABLE SPLIT

Eugene M. Noel, 42 Kingston Road, Newton Highlands, Mass.

Filed Feb. 7, 1972, Ser. No. 224,067
Int. Cl. B26f 3/02
U.S. Cl. 225—97 5 Claims



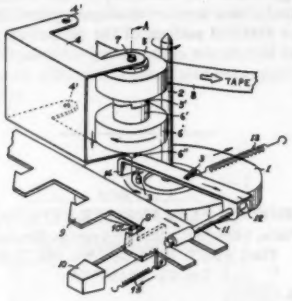
An automatic muffin splitting machine of increased productivity having a continuously traveling conveyor belt for 6 muffins to a tining section to be tined and split, said tining section having first and second pluralities of tines operating from respective opposite sides of the conveyor belt, said pluralities of tines traversing the belt in simultaneous reciprocal interdigitating cooperation from the opposite sides thereof and the first plurality of tines being automatically lifted out of the plane of interdigitation with the second plurality of tines to split the muffin as full penetration of the tines into the muffins is reached, the tining operation being intermittent to act on a predetermined group of muffins and being powered and coordinated with the movement of the traveling belt by twin pilot-operated air cylinders for reciprocating the tining bars carrying the first and second pluralities of tines, and said splitting of said tined muffins being coordinated with the tining operation by pilot-operated air cylinders for lifting said first plurality of tines out of said plane of interdigitation with said second plurality of tines; whereby the machine automatically produces muffins tined and split, but not fully separated, for easy hand opening and having the proper split surface for best grilling or toasting.

3,737,085

AUTOMATIC SHUTOFF SYSTEM FOR MAGNETIC TAPE REPRODUCERS AND RECORDERS

Nobuo Suzuki, No. 26-9, Yokoyama 3-chome, Sagamihara, Japan

Filed Apr. 26, 1972, Ser. No. 247,754
Claims priority, application Japan, Aug. 21, 1971, 46/63882
Int. Cl. B65h 25/00
U.S. Cl. 226—11 4 Claims



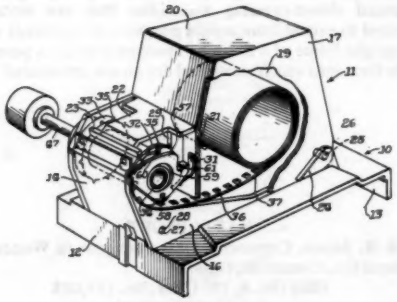
A magnetic tape reproducer and recorder with an automatic switch-off system, including a pivotally mounted roller assembly comprising a pressure roller which is axially aligned with a guide roller adapted to be rotatable independently of the pressure roller and effecting the giving of a signal which causes the starting button of the tape device to return to its inoperative starting position when the tape has run off.

3,737,086

FILM RETENTION MEANS FOR FILM CARTRIDGES

Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 23, 1971, Ser. No. 183,125
Int. Cl. B65h 25/00
U.S. Cl. 226—11 2 Claims



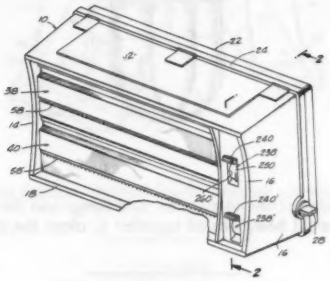
A film cartridge for a projector having an end of film sensing means for blocking the film driving means from feeding film into the cartridge while maintaining engagement of the film end with the driving means whereby the driving means can conveniently feed the film out of the cartridge.

3,737,087

DISPENSING APPARATUS FOR ROLLED MATERIALS

Jack Rooklyn, Northridge, Calif., assignor to Mirra-Cote Co., Inc., El Segundo, Calif.

Filed May 24, 1972, Ser. No. 256,545
Int. Cl. B65h *17/42*
U.S. Cl. 226—110 8 Claims



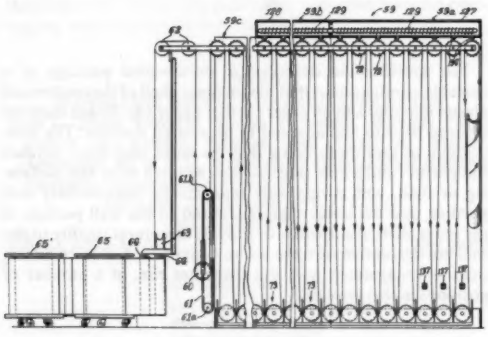
A dual, power driven dispenser for dispensing rolled material such as paper. Two power driven rolls are provided, each being operable by a manual control which also opens one of two dispensing doors for the web or strip of paper which is being dispensed. The web is torn off after the door closes. A single drive motor is provided for operating both the power driven rollers through two separate gear trains. Each gear train is brought into driving engagement with the motor when its respective roller is to be driven. Each manual handle embodies an adjustable key member and a mechanism to make possible manual operation without driving either power driven roller.

3,737,088

WEB PROCESSING APPARATUS

Franz Barta, Vienna, Austria, and Alfred F. Grupp, Glen Ellyn, Ill., assignors to The Meyercord Co., Carol Stream (Wheaton), Ill.

Division of Ser. No. 67,890, Aug. 28, 1970, Pat. No. 3,694,928. This application June 9, 1972, Ser. No. 261,374
Int. Cl. B65h *17/42*
U.S. Cl. 226—119 14 Claims



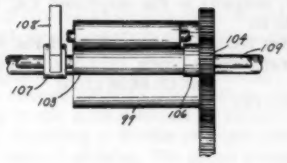
A web processing apparatus is provided, particularly for drying the printed surface of a continuous web. The web is disposed in festooned relation between upper driving rolls and lower restraining rolls or guides disposed in the depending loops of the festooned web. The restraining rolls or guides have end rim portions which engage and support the web at its marginal edge portions. A plurality of web correction elements, such as toothed annular elements, are provided between the rim portions, and the web is normally held in spaced relation from the web correction elements but is engageable therewith for straightening out collapsed areas or inwardly deflected portions of the web as it passes around the restraining rolls or guides. Preferably, a gaseous medium is passed through an enclosure for the festooned web, and the arrangement permits relatively high flow rates and velocities without disturbing the web.

3,737,089

PRESS FOR WEB PRINTING HAVING INTERMITTENT PAPER FEEDING MEANS

Fred M. Slavic, 41 West 25th Street, New Rochelle, N.Y.

Division of Ser. No. 863,188, Oct. 2, 1969. This application Nov. 26, 1971, Ser. No. 202,161
Int. Cl. B65h *17/22*
U.S. Cl. 226—156 1 Claim



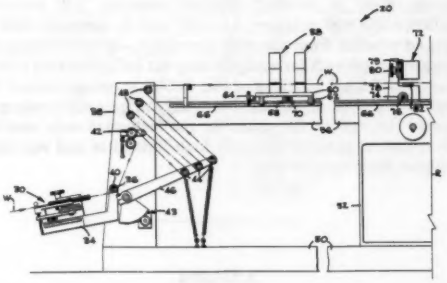
An improved press for intermittent paper web feeding including means for synchronously driving each end of the web through identical and simultaneous motion. Means is provided for improved clutching action, and the maintenance of a variable loop in the web existing between a continuously rotating paper feed supply and the incremental web feeding means.

3,737,090

DRAW ROLL ASSEMBLY FOR BAG MACHINE

Robert J. Wech, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 760,048, Sept. 16, 1968. This application Sept. 1, 1971, Ser. No. 176,899
Int. Cl. B65h *17/22*
U.S. Cl. 226—187 3 Claims



The disclosure concerns a draw roll assembly for feeding a web to the seal bar of a thermoplastic bag making machine to regulate the nip pressure as required by the thickness of the web. To accommodate variations in the number of plies across the web, yet provide equal nip pressure between the draw rolls, one roll can be adjusted to operate in a non-parallel relation with the other roll. The draw roll assembly is disclosed in conjunction with a side weld bag making machine.

A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having a lip with a pair of holes in which is inserted a U-shape wire called a wicket. Downstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web is driven by the draw roll assembly of the present invention and is fed thereby to a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced inter-vals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,737,091

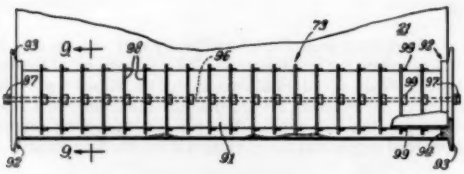
WEB PROCESSING APPARATUS

Franz Barta, Vienna, Austria, and Alfred F. Grupp, Glen Ellyn, Ill., assignors to The Meyercord Co., Carol Stream (Wheaton), Ill.

Division of Ser. No. 67,890, Aug. 28, 1970, Pat. No. 3,694,928. This application June 9, 1972, Ser. No. 261,382

Int. Cl. B65h *17/20*

U.S. Cl. 226—193 **7 Claims**



A web processing apparatus is provided, particularly for drying the printed surface of a continuous web. The web is disposed in festooned relation between upper driving rolls and lower restraining rolls or guides disposed in the depending loops of the festooned web. The restraining rolls or guides have end rim portions which engage and support the web at its marginal edge portions. A plurality of web correction elements, such as toothed annular elements, are provided between the rim portions, and the web is normally held in spaced relation from the web correction elements but is engageable therewith for straightening out collapsed areas or inwardly deflected portions of the web as it passes around the restraining rolls or guides. Preferably, a gaseous medium is passed through an enclosure for the festooned web, and the arrangement permits relatively high flow rates and velocities without disturbing the web.

3,737,092

PACKAGING CONTAINER HAVING A CONTAINER BODY OF THERMOPLASTIC MATERIAL AND A METAL FOIL LINING INSERTED INTO THE CONTAINER BODY

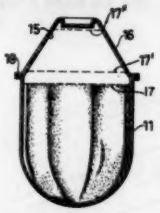
Anders Ruben Rausing, Blentarp, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland

Filed Mar. 17, 1971, Ser. No. 125,350

Int. Cl. B65d *25/14*

U.S. Cl. 229—14 B **2 Claims**

A substantially impermeable packaging container having a container body of a thermoplastic material with an outwardly extending flange about the top opening thereof, said container body having a metal foil lining extending upwardly to the edge of the top opening and a lid member of thermoplastic material with an inner metal foil lining, said lining stopping short of the marginal edge of the lid member, said flange and the marginal edge of the lid being sealed together to close the packaging container.



3,737,093

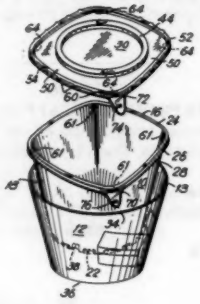
MULTI WALL CONTAINER AND PACKAGE

Stephen W. Amberg, Saint James, and Rodney E. Ludder, Glen Head, both of N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 747,183, July 24, 1968, abandoned. This application July 13, 1971, Ser. No. 162,222

Int. Cl. B65d *62, 64*

U.S. Cl. 206—14 R **14 Claims**



The specification describes a multi-walled package of a nestable configuration that has an inner shell of thermoformed plastic material and an outer shell of paper cardboard material secured thereto and adapted to be printed thereon. The relationship of said shells being that the inner shell has a formed rim portion and a base portion each adapted to be self-sustaining or rigid, with a relatively thin flexible intermediary wall portion, and the outer shell is secured to the wall portion of the inner shell in a manner to provide structural rigidity to the wall portion and in turn the entire container. A closure having snap-in engagement with the container rim, at a number of positions is also provided.

3,737,094

COUNTER DISPLAY CONTAINER

Bob Beaver, and Edward T. Turner, Jr., both of Terre Haute, Ind., assignors to The Weston Paper and Manufacturing Co., Terre Haute, Ind.

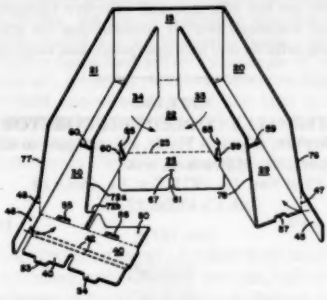
Filed Feb. 7, 1972, Ser. No. 224,128

Int. Cl. B65d *5/22*

U.S. Cl. 229—34 R **18 Claims**

A container and a blank therefor have integral lateral and

longitudinal dividing walls and means for firmly interlocking



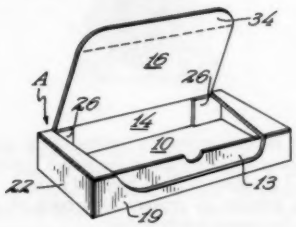
the various portions thereof and forming an attractive display device.

3,737,095

RECLOSABLE CONTAINER

Richard E. Derauf, Madison, Wis., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.

Filed Apr. 1, 1971, Ser. No. 130,226
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TC **1 Claim**



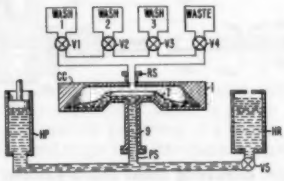
A container is provided which may be erected from a flat blank and which requires a single area of adhesive to seal. This area is between the outer surface of an inner wall and the inner surface of an overlapping wall. Weakened lines of separation are provided in the overlapping wall and continue across the top panel, providing a potential opening. The container may be reclosed by tucking the area torn from the overlapping wall inwardly of the inner wall.

3,737,096

BLOOD PROCESSING CONTROL APPARATUS

Alan L. Jones, Endwell; George T. Judson, Whitney Point; Robert M. Kellogg, Endwell, and Victor R. Kruger, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,194
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **11 Claims**



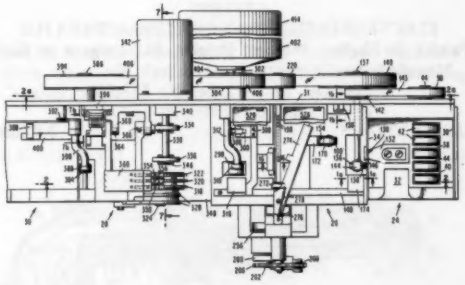
Apparatus for processing blood, and particularly for washing blood cells, including a centrifuge head in which is arranged a flexible blood container connected by a rotating seal to tubing which permits the entrance and exit of wash liquid and supernatant. The flow of liquid in the tubing is controlled by valve arrangements which are operable to permit the entrance of wash liquid and removal of supernatant liquid. The flexible container fits over a flexible membrane also arranged inside the centrifuge head about a solid central core. The volume defined by this membrane and the core communicates via a passage in the core with a fluid reservoir by means of a control pump which allows fluid to enter and exit from the volume defined by the membrane. During operation the unwashed blood may be entered into the container or blood bag before or after the bag is placed in the centrifuge. The centrifuge is spun until cells have settled against the outside wall at which time the valve arrangements and the control pump are activated such that fluid is pumped into the centrifuge under the volume defined by the membrane thereby forcing a supernatant to flow out to a collect container. The centrifuge is then stopped and the wash solution enters the blood container through another valve arrangement, thereby allowing the removal of fluid from the volume inside the flexible membrane. Removal of the wash liquid is accomplished by the same process of removal as the removal of supernatant previously described. Provisions are made for electrical control of all the operations including an agitate operation in which the centrifuge is spun in alternate directions for only a few revolutions or goes through alternate accelerate-decelerate cycles while rotating in the same direction to thereby agitate the material in the blood bag or flexible container during the time that a wash solution is entering. The circuit arrangements are such that a high degree of flexibility in the programming of the various operations can be obtained.

3,737,097

MACHINE FOR PUNCHING AND PRINTING DOCUMENT CARDS

Theodore B. Barna; Roger F. Dimmick; Merlin J. Ricklefs; Walter S. Schaffer, and Gordon W. Westphal, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

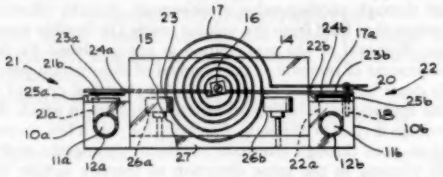
Filed Mar. 27, 1972, Ser. No. 238,028
Int. Cl. G06k *1/02*
U.S. Cl. 234—114 **6 Claims**



A document card punching and printing machine having a document card hopper, a punch station, a print station and a stacker for receiving the punched and printed cards. An electrically controlled pneumatic actuator moves pick rolls upwardly through the bottom of the hopper for moving the cards one at a time out of the hopper toward the punch station. The punch station includes card incrementing rolls; and a pair of pneumatic actuators, similar to the first actuator, control pressure rolls for causing the card to increment through the punch station and then to move out of the punch station. The

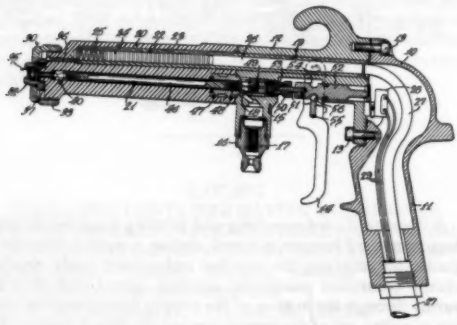
punching mechanism includes a pair of electrically controlled pneumatic actuators for moving interposers in the punching mechanism into operative positions for punching. Each of the pneumatic actuators may be readily removed from the machine for easy replacement. The print station includes a plurality of print hammers cooperating with rotating print wheels disposed therebelow, and the print hammers are mounted on a swingable carriage so that the hammers and carriage may be readily lifted up for clearing any card jams in the print station.

3,737,098
TEMPERATURE-PRESSURE TRANSDUCER
Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Inglewood, Calif.
Filed Dec. 7, 1971, Ser. No. 205,503
Int. Cl. G05d *23/275*; G05b *11/48*
U.S. Cl. 236—87 **8 Claims**



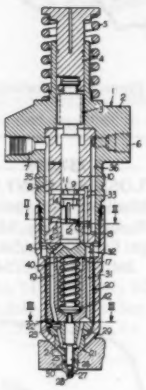
In the present invention, a pair of outlet channels are coupled directly to a relatively low pressure source and through a pair of thermostatically-controlled valves are also coupled to a relatively high pressure source. Only one or the other of the valves is open at any one time. Accordingly, when the transducer is in a relatively cool environment, one outlet channel will have the high pressure in it and the other outlet channel will have the low perssure in it. On the other hand, when the transducer environment is relatively warm, the pressures in the two outlet channels are reversed. The valves governing the pressures in the outlet channels are opened and closed in response to the motion of a coiled bi-metallic strip and, consequently, are opened and closed in response to the ambient temperature conditions.

3,737,099
ELECTROSTATIC SPRAY COATING APPARATUS
Patrick D. Shaffer, Prospect Heights, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.
Filed Oct. 29, 1971, Ser. No. 193,960
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **8 Claims**



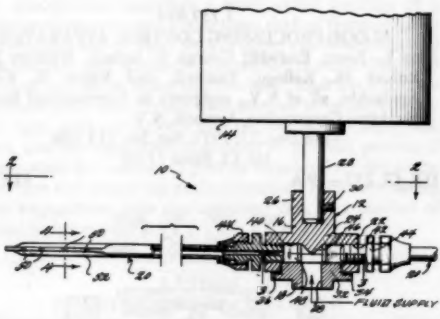
Electrostatic spray coating apparatus including means for mechanically atomizing coating materials and means for electrostatically charging and depositing the atomized material onto articles, characterized by the features, individually and collectively, of improved means including an improved charging electrode for the efficient and effective charging of the material, and enhanced overall construction for greater service life, more reliable and safe operation, and economy.

3,737,100
INTERNALLY COOLED UNIT INJECTOR
Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 18, 1971, Ser. No. 199,922
Int. Cl. F02m *39/00*
U.S. Cl. 239—89 **10 Claims**



A unit fuel injector providing cooling of the nozzle by the fuel, with a valve arrangement in the return passage to intermittently stop circulation of the fuel and a check valve in the fuel delivery passage to prevent blow-back of combustion gases during the engine power stroke.

3,737,101
POWER ROTATED DEVICE FOR DISPERSING FLUIDS INTO A GASEOUS ENVIRONMENT
William H. Johnson, Raleigh, N.C., assignor to Patent & Development of N.C., Inc., Raleigh, N.C.
Filed Sept. 17, 1971, Ser. No. 181,527
Int. Cl. B05b *3/00*
U.S. Cl. 239—225 **13 Claims**



A device for dispersing fluids into a gaseous environment which includes a hollow body mounted for rotational movement about an axis of rotation by a motor or the like, the hollow body having a plurality of discharge orifices spaced cir-

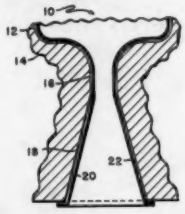
cumferentially about the axis shaped to disperse fluid under pressure communicated interiorly therewith outwardly thereof in a pattern which diverges outwardly with respect to a line of symmetry, the line of symmetry associated with each orifice being related to a line tangential to the axis of rotation intersecting the associated orifice by an angle of less than 46° measured in any direction therefrom whereby dispersion of a source of fluid communicated with the inlet of the hollow body is distributed through the orifice into the surrounding gaseous medium under the action of both the pressure energy and kinetic energy developed during the operation of the device.

3,737,102

CORROSION RESISTANT ROCKET NOZZLE

Richard S. Garard, and William J. Mertens, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Sept. 21, 1970, Ser. No. 73,738
Int. Cl. B64d *33/04*
U.S. Cl. 239—265.15 **1 Claim**



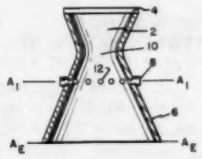
A corrosion resistant rocket nozzle for small rocket motors is disclosed. The rocket nozzle has a layer of hard anodize coating on the nozzle surface to reduce the effect of erosion during rocket burning. An ablative layer is placed over the anodize coating to produce a layer of cool gases alongside the nozzle walls during burning.

3,737,103

DIGITAL LIQUID VECTOR CONTROL SYSTEM

Glen W. Howell, Los Angeles, and Robert G. Gilroy, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 28, 1969, Ser. No. 853,802
Int. Cl. B63h *25/46*
U.S. Cl. 239—265.23 **4 Claims**



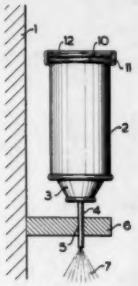
To vary the thrust vector of a rocket engine, simple digitally controlled, injectant powered liquid injection valves are spaced equally around the periphery of a rocket engine nozzle. Vector angle and magnitude information is provided from the guidance system to a controller which converts this information into electrical signals which energize the appropriate injectant valve pilot valves to provide the desired thrust vector angle and side force magnitude.

3,737,104

DEVICE FOR AUTOMATICALLY DISCHARGING AN EFFECTIVE SUBSTANCE INTO A NORMALLY CLOSED ROOM

Helmut Schneider, Mainz/Rhine, Germany, assignor to Werner & Mertz GmbH, Main/Rhein, Germany

Filed Nov. 3, 1971, Ser. No. 195,201
Claims priority, application Germany, Nov. 4, 1970, P 20 54 219.2; Apr. 28, 1971, P 21 20 738.5; June 8, 1971, P 21 28 372.7
Int. Cl. B05b *15/00*
U.S. Cl. 239—274 **20 Claims**



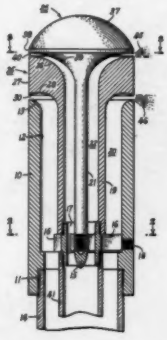
In automatically discharging an effective substance, such as a deodorizing agent, from an aerosol container into a normally closed room, such as a bathroom, closet and the like, the aerosol container is pivotally mounted in a rigid holder secured to the door of the room so that the container provides a flywheel mass which discharges the effective substance when the door is displaced from its normally closed position. Preferably, a tilting valve forms the discharge member from the container, the container can be supported by the holder in the upright or inverted position. In effecting a slow release of the effective substance, it can be sprayed into a porous sponge-like member secured in the holder from which it slowly evaporates. Further, for signalling that the container is empty, a whistle device can be arranged at its outlet opening for providing a whistle tone when the container is empty or a whistle tone can be provided at each discharge from the container so that the tone is no longer emitted when the container becomes empty.

3,737,105

DOUBLE SPRAY NOZZLE

Orlan M. Arnold, Grosse Pointe Park, Mich., and Michael F. Horn, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,944
Int. Cl. B05b *1/14, 1/26*
U.S. Cl. 239—423 **4 Claims**



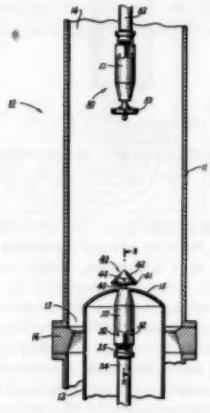
A nozzle for producing a pair of axially spaced radial sprays comprising a pair of concentric pipes, each having a deflector

disc with its under surface shaped to deflect a cylindrical jet of liquid from an axial to a radial direction and to discharge the same as a radial spray.

3,737,106
360° SPRAY NOZZLE

Orlan M. Arnold, Grosse Pointe Park, Mich., and Michael F. Horn, Stamford, Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,174
Int. Cl. B05b *1/26*
U.S. Cl. 239—518 **5 Claims**



Apparatus for producing a 360° radial spray comprising an axial nozzle adapted to eject a liquid jet and a deflector extending transversely of the axis of the nozzle and having an annular channel concentric with the axis with a radial section in the form of a curve adapted to deflect the liquid from axial to radial direction and to discharge the liquid in the form of a spray around its entire periphery.

3,737,107
VERTICALLY ADJUSTABLE SHOWER HEAD

Roy L. Wright, 3572 W. Lyndale Avenue, Chicago, Ill.

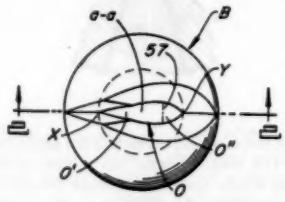
Filed July 8, 1971, Ser. No. 160,821
Int. Cl. A47k *3/22*
U.S. Cl. 239—588 **3 Claims**

A device allowing for the vertical adjustment of a shower head to a plurality of elevations to accommodate substantially all heights of individuals, including children, and having a housing covered by a face plate with an elongated opening for movement of the shower head therealong, there being an open flexible shower-slide loop curved back on itself within the housing slidably mounted on a track mounted on the cover plate for closing and sealing the opening therein, the shower-slide carrying a mounting block having a conventional shower head mounted on its outside face and connected to a flexible hose coiled within the housing, said hose being combined with a helical spring which constantly urges the hose to a tightly coiled position to allow for extension without kinking thereof, the hose being connected to a suitable water supply source outside of the housing.

3,737,108
SPRAY NOZZLE

William C. Stumphauzer, Sheffield Lake, Ohio; Edwin F. Hogstrom, Manchester, Mo.; Eric T. Nord, Oberlin, Ohio; Richard E. Schneider, Elyria, Ohio, and Alvin A. Rood, Westlake, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 13,598, Feb. 24, 1970, Pat. No. 3,697,313.
This application June 8, 1972, Ser. No. 261,027
Int. Cl. B44d *1/08;* **B05b** *1/04*
U.S. Cl. 239—598 **10 Claims**



An airless spray nozzle particularly adapted for coating the interior cylindrical surface of objects such as metal cans for food, beverages and other substances which need protection against injurious reaction with or pollution from contact with the material of the can. The nozzle has an orifice that produces a spray having an asymmetrical fan-shaped pattern so that the flow can be matched to the internal surface configuration of a can or similar cylindrical object to apply a uniform coating thereto.

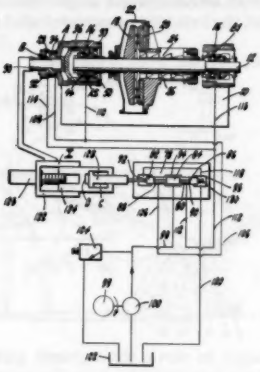
3,737,109
DOUBLE-ACTING AXIAL THRUST AND RADIAL BEARINGS FOR GRINDING APPARATUS

Johan Gunnar Inge Johansson, Taby, Sweden, assignor to Difibrator Aktiebolag, Stockholm, Sweden

Filed Nov. 23, 1970, Ser. No. 91,638
Claims priority, application Sweden, Oct. 26, 1970, 14436/70
Int. Cl. B02c *25/00*
U.S. Cl. 241—37 **4 Claims**

A combined axial and radial thrust bearing device for a rotary shaft composed of two components, each of which comprises an annular ring fixed to the shaft and an annular ring supported free of the shaft both of which rings engage each other through bearing means. Between the two opposing free annular rings is provided a member which is adapted to exert internal pressure on the annular rings in an axial direction to minimize play between the two components. The member is

adapted to be actuated by a pressure fluid in such a manner that the internal pressure exerted on the annular rings is

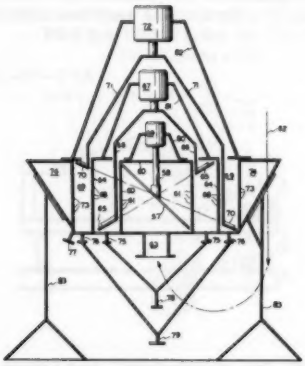


reduced in response to an increase in pressure in an axial direction exerted on the shaft externally of the bearing.

3,737,110
PUMP

Georg Neidl, Im Bisch 664, Schaan, Liechtenstein

Division of Ser. No. 822,342, Feb. 18, 1969, Pat. No. 3,640,474, which is a division of Ser. No. 452,502, May 3, 1965, Pat. No. 3,502,274. This application Sept. 11, 1970, Ser. No. 71,351
Int. Cl. B02c *13/13*
U.S. Cl. 241—43 **2 Claims**



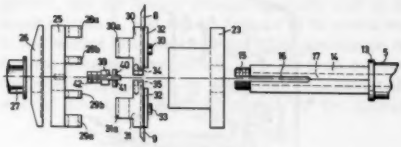
A combined pumping and filtering mechanism for viscous liquids containing solids comprises a central cylindrical chamber surrounded by one or more concentric annular chambers, each of which contains a rotatable impeller mounted at an angle with respect to a radial plane.

3,737,111
MEAT CUTTER

Hans Neuner, D-3562 Wallau, Lahn, Von der Hardt, Germany

Filed May 10, 1971, Ser. No. 141,673
Claims priority, application Germany, May 12, 1970, P 20 23 066.4
Int. Cl. B02c *18/10*
U.S. Cl. 241—282.2 **5 Claims**

A meat cutter having an annular rotating bowl with cutter members arranged adjacent one side of said bowl. Said cutter members are mounted on a suitable spindle and at least the last pair of cutters, taken in the direction of rotation of the bowl, are arranged for movement in opposite directions with respect to the axis of said spindle. Particularly a push rod

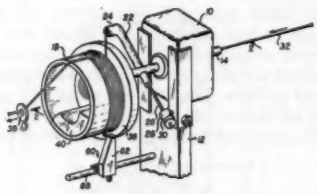


coaxial with the spindle, and operable by a cam from a point externally thereof, acts through a linkage adjacent the base of said cutters for effecting the angular positioning of the cutters with respect to the spindle axis.

3,737,112
YARN FEEDING AND STORAGE DEVICE FOR TEXTILE PRODUCING MACHINE

Edward M. Tellerman; Richard Paul Kashden, both of East Rockaway, N.Y.; Edward W. Schussel, King of Prussia, Pa., and Robert J. Vossen, Malverne, N.Y., assignors to Wesco Industries Corporation, Plainview, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,939
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.01 **24 Claims**



There is disclosed a device for feeding yarn from a supply thereof to a textile producing machine. A storage drum is provided about which there orbits yarn winding means whereby the yarn is wound onto the drum tangentially for subsequent axial withdrawal on its way to the textile producing machine with a minimum of tension. A feeler biased against the drum detects the presence of a predetermined minimum quantity of yarn wound onto the drum after which it controls, through time delay means, additional winding for a predetermined time period. There are disclosed a number of different forms of winding means including the use of a rotatably mounted disk and rotatably mounted annular member, each of which carries the storage drum which is prevented from having significant rotation.

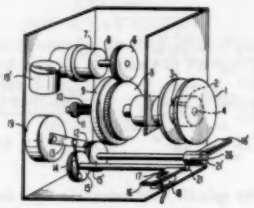
3,737,113
DEVICE FOR AUTOMATICALLY TAKING UP A MOTION PICTURE FILM

Shinichi Yabe, and Mitsuru Katsumata, both of Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1971, Ser. No. 199,161
Claims priority, application Japan, Nov. 16, 1970, 45/100913
Int. Cl. G03b *1/56*; B65h *17/02*
U.S. Cl. 242—67.1 **6 Claims**

A device for automatically taking up a strip of film or other material has a film feeding outlet constructed at the end of a movable guide mounted on the respective shafts of two engaged gears. A third shaft is provided for mounting a reel having a slit on a core for winding the film opposite to the outlet.

An inner cam mechanism is positioned for holding the third shaft in such a manner that the outlet is disposed opposite the slit. An outer cam mechanism is provided for rotating the reel after the end of the film passes through the outlet to enter the

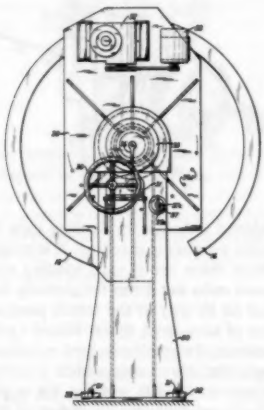


slit and in addition holds the outlet in a half open state. The outer cam mechanism further fully opens the movable guide when the reel rotates so that the end of the film is fixed to the core, thereby permitting the film to be automatically taken up.

3,737,114
ROLL CHANGING DEVICE FOR A STRIP ACCUMULATOR

Robert Alfred Somerhalder, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Nov. 11, 1971, Ser. No. 197,778
Int. Cl. B21c *47/24*; B65h *19/30*
U.S. Cl. 242—79 **5 Claims**



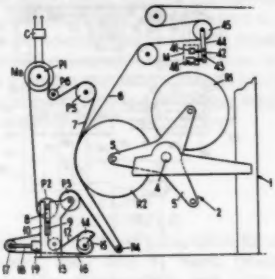
The disclosure of this invention relates to a device for removing and replacing the rolls of a rotary strip accumulator. The device comprises a roll supporting arm cantileverly mounted to a frame which arm is adapted to be positioned to protrude into the center of the accumulator and be adjusted both radially and angularly so that a roll to be replaced can be attached to the arm and removed by moving the frame away from the accumulator.

3,737,115
WEB-TRANSISIONING APPARATUS

Noel John Baker, London, England, assignor to Wilton-James Limited, Wembley, England

Filed May 10, 1971, Ser. No. 143,696
Claims priority, application Great Britain, May 8, 1970, 22,299/70
Int. Cl. B65h *23/08*
U.S. Cl. 242—75.1 **7 Claims**

Apparatus for automatically tensioning a web of material being drawn from a reel, utilizing a belt engaging the side of the reel, the belt being in the form of a continuous loop contacting the reel surface and being driven in use of the apparatus to reduce the relative speed between the contacting surfaces of the belt and reel which might result in damage to the reel material, the belt being associated also with compen-

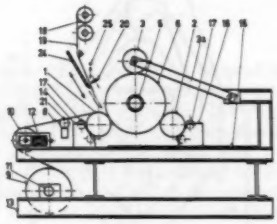


sating means for maintaining a substantially constant tension throughout the life of the reel despite the gradual reduction in reel diameter.

3,737,116
MACHINE FOR WINDING HIGH-VOLTAGE ELECTRICAL BUSHINGS

Guido Rossi, Unterengstringen, and Markus Keiser, Reitnau, both of Switzerland, assignors to Micafil A.G., Zurich, Switzerland

Filed Sept. 2, 1971, Ser. No. 177,371
Claims priority, application Germany, Sept. 7, 1970, P 20 44 263.1
Int. Cl. B65h *39/16*
U.S. Cl. 242—56.1 **10 Claims**

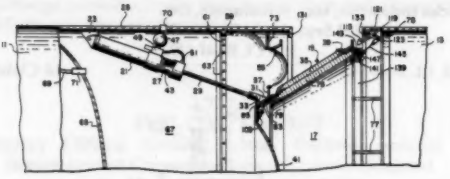


A machine for manufacturing high-voltage electrical bushings of the condenser type comprises a system of rolls supporting a rotatably driven conductor tube which serves as the core on which a paper web pulled from a supply roll is wound to form the body of the bushing, the roll system being displaceable to accommodate the change in diameter of the bushing as it is progressively enlarged. Rolls of aluminum foil arranged in longitudinally spaced, overlapped relation supply edge-overlapped webs of selectable overall width which are inserted into the paper being wound, at the required different diameters within the bushing body, to form corresponding radially spaced cylindrical capacitive control shields. Rotary knives are also arranged to operate along each edge of the paper web to slit the web as it is drawn off the supply roll and these knives are shifted laterally of the web and independently of each other at a speed coordinated to the winding speed of the bushing body so as to develop a desired conical contour at each end of the completed bushing body when the excess edge material cut off by the knives is removed.

3,737,117
DOCKING STRUCTURE FOR SPACECRAFT

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 6, 1971, Ser. No. 159,966
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SD **10 Claims**

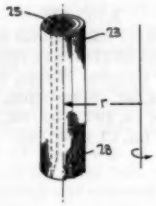


A docking structure for a pair of spacecraft comprising a conical receptacle on the docking end of a first spacecraft that receives a mating conical projection on the docking end of the second spacecraft. The conical receptacle of the first spacecraft constitutes an exterior portion of a sealed gas-tight compartment. Pressurization of the sealed compartment causes the conical receptacle to extend toward the incoming conical projection of the second spacecraft and when the mating conical portions are latched together, the docking energy is absorbed by the compressed gas in the sealed compartment. Rebound forces are countered by a plurality of actuator cylinders supporting the conical receptacle.

3,737,118
NUTATION DAMPER

Jack Evans, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 18, 1971, Ser. No. 107,376
Int. Cl. B64g *1/20*
U.S. Cl. 244—1 SA **9 Claims**



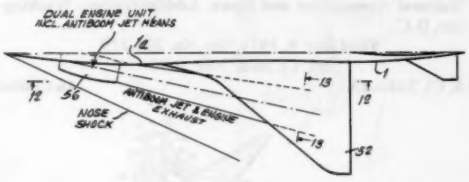
A nutation damper for use on a spinning body is disclosed wherein the damper is positioned parallel to the spin axis of the body and radially displaced therefrom. The damper is partially filled with a fluid and contains a porous media to impede the flow of the fluid induced by nutation.

3,737,119
DEVICE FOR SONIC BOOM REDUCTION AND IMPROVING AIRCRAFT PERFORMANCE

Sin-I Cheng, Princeton, N.J., assignor to Research Corporation, New York, N.Y.

Filed June 15, 1970, Ser. No. 46,293
Int. Cl. B64c *21/00*
U.S. Cl. 244—1 N **50 Claims**

Method and means for improving the performance of, and particularly for reducing the sonic boom produced by a supersonic aircraft, comprising the production of a jet stream of approximately equal pressure but higher Mach number than the ambient supersonic flow, which steam is directed below the wing leading edge to intercept and interact with the wing shock wave. The interaction weakens the wing shock and decreases its propagation velocity, so that the wing shock, which normally reinforces the leading nose shock at the ground, will be shifted aftward spatially and in time in the boom signature, and will be delayed in its arrival with respect to the leading nose shock at any fixed position on the ground. By thus altering the signature, both the peak overpressure and the positive impulse of the boom may be substantially reduced without affecting the lift in support of the aircraft. Indeed,

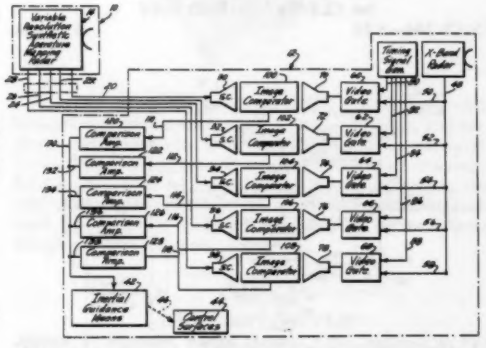


proper use of the stream will increase the lift on the aircraft, permitting some decrease in the angle of attack in maintaining level flight, which further weakens the wing shock to add to the altering of the boom signature. Also, the increase in lift, occurring largely on the aft part of the wing, results in reduction in drag, aftward shift of the center of pressure, and increase in the aerodynamic efficiency factor or lift-to-drag ratio, so that the jet stream can be used to improve various aspects of aircraft performance. Supersonic aircraft equipped with the anti-boom means, and a particular feasible means for producing the antiboom jet using existing technology are described, along with particular alternatives for the manner of incorporating the means on existing supersonic transports.

3,737,120
RADAR MAP COMPARISON GUIDANCE SYSTEM

Elberson D. Green, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 7, 1967, Ser. No. 690,707
Int. Cl. F42b *15/02*; G01s *9/02*
U.S. Cl. 244—3.17 **6 Claims**



A map matching vehicle guidance system wherein a launching vehicle having variable resolution, synthetic aperture mapping radar makes a series of maps of graduated

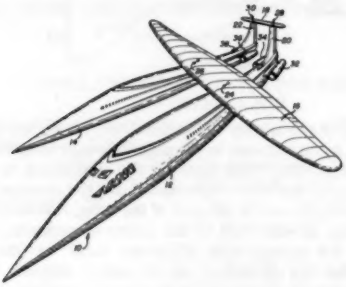
resolution all from a substantial distance from the target, deposits the maps in the launched or guided vehicle which carries conventional, non-processing mapping radar, and wherein the guided vehicle carries map comparing means for sequentially comparing the graduated resolution maps with instantaneous maps from its own radar to provide error signals to correct an otherwise inertial guidance system in directing the guided vehicle to its target.

3,737,121

DUAL-FUSELAGE AIRCRAFT HAVING YAWABLE WING AND HORIZONTAL STABILIZER

Robert T. Jones, Los Altos Hills, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 9, 1971, Ser. No. 206,279
Int. Cl. B64c *1/02, 3/38*
U.S. Cl. 244—13 **16 Claims**



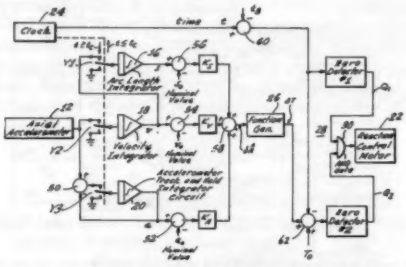
An aircraft including a pair of fuselages disposed in parallel and coupled together by a main wing and a horizontal stabilizer which are pivotally attached to the fuselages. The pivotal attachment allows the airfoils to be yawed relative to the fuselages for high speed flight while at the same time spreading the weight and volume distribution of the aircraft along the direction of flight. The main wing is upwardly curved at the ends to compensate for any roll tendency caused by its yawed positioning.

3,737,122

TACTICAL MISSILE RANGE CONTROL SYSTEM

Edwin G. Solov, and Bernard F. Papa, both of Wayne, N.J., assignors to Singer-General Precision, Inc., Little Falls, N.J.

Filed May 7, 1971, Ser. No. 141,318
Int. Cl. F41g *7/00;* **F42b** *15/02*
U.S. Cl. 244—3.21 **6 Claims**



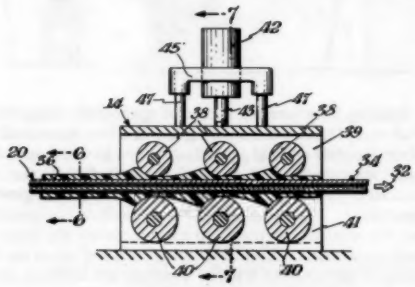
A range control system is provided for a missile or projectile which utilizing its inflight prediction of the impact range error, provides means for correcting for this error. The system is carried in the vehicle, and it includes a comparator system which compares outputs from a vehicle-mounted accelerometer system with predetermined values. Any differences are fed to a function generator which produces a control signal. The control signal from the function generator operates a reaction control motor which, in turn, compensates for any variations of the vehicle from its course, so that the predetermined range of the vehicle is maintained.

3,737,123

ENERGY ABSORBER FOR AIRCRAFT ARRESTING DEVICE

Umberto A. Carnevale, New Castle, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed Sept. 16, 1971, Ser. No. 181,026
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 A **10 Claims**



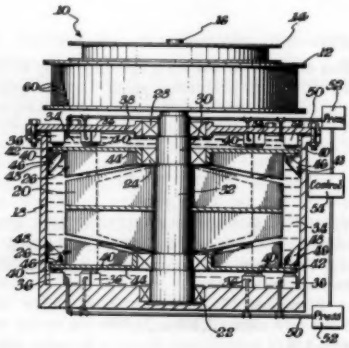
The energy absorption for an aircraft arresting device is accomplished by perpendicularly deforming a strong, thick and wearresistant elastomeric coating on the linear payout element. This deformation is accomplished by pressing antifriction elements, such as rollers, into the elastomeric coating, which restores to its original shape upon release from the pressure. The core of the payout element is strong rope or woven nylon tape and it is stored and payed out from a low inertia system, such as a faking box or circular track storage device. A tension control system controls the amount of deforming pressure to maintain the arresting force substantially constant throughout an arrestment or in any other desirable program.

3,737,124

VARIABLE ENERGY ABSORBER FOR AIRCRAFT ARRESTING SYSTEM

William R. Schlegel, Colonial Woods, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed Mar. 16, 1972, Ser. No. 235,349
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 A **10 Claims**



The vaned flow reactor elements of an energy absorber for an aircraft arresting system are rotatably mounted coaxially

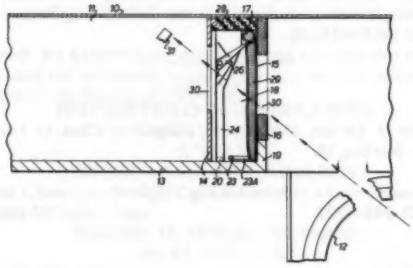
on both sides of the vaned rotor to allow relative slippage in response to the flow reaction between them as the rotor is rotated by the input drive. The input drive is applied through a nylon tape or any other suitable payout element. Brakes within the casing retard the flow reactors and control their slippage to vary the force of the flow reaction between the flow reactors and rotor and thus vary the energy absorbed from the input drive. The more the reactor is retarded, the greater is the reaction force on the rotor and energy absorbed thereby. The brakes within the casing are disposed in heat exchange relation with the fluid to cool them and also to simplify the structure of the device.

3,737,125

FUEL CONTAINMENT

Rodney Clifford Farmer, Bristol, England, assignor to British Aircraft Corporation Limited, London, England

Filed Nov. 5, 1970, Ser. No. 87,279
Int. Cl. B64d *37/32*
U.S. Cl. 244—135 B **14 Claims**



An aircraft having an internal liquid fuel tank mounted in a wing thereof, with a wall of the tank facing a jet engine mounted on the wing, is provided with means for containing fuel leaking through a puncture in that wall of the tank caused by a broken compressor blade or other part flung out of the rotary portion of the engine. A containment chamber is formed by an outer wall spaced from the vulnerable wall of the tank, and an inflatable bag is mounted in the chamber in a deflated condition for storage. The deflated bag is rolled around a drum and its outer edge is permanently secured along the lower edge of the outer wall. A leak detector in the chamber senses a fuel leak and responds thereto by automatically triggering a control valve to release pressurized gas into the gas bag to inflate it.

As the bag inflates, the drum is rolled across the inner face of the outer wall and is retained by locking means so that the erected bag extends across and overlies any puncture in the area of the outer wall covered by the bag, such as may have been caused by a flying blade.

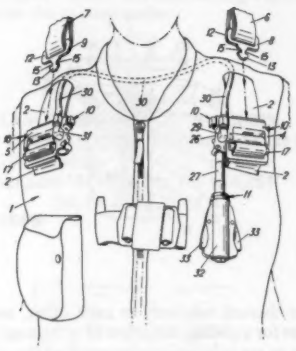
3,737,126

EJECTION SEAT ESCAPE SYSTEM

James Martin, Southland Manor, Southland Road, Uxbridge, England

Filed Mar. 23, 1971, Ser. No. 127,125
Claims priority, application Great Britain, Apr. 15, 1970, 18,039/70
Int. Cl. B64d *17/30*
U.S. Cl. 244—151 B **1 Claim**

The invention concerns release mechanisms and parachute harnesses having such mechanisms, the purpose of the invention being to permit donning of a harness by a person before entering an aircraft or like vehicle and to permit release of the parachute therefrom rapidly in certain emergency conditions, the mechanism comprising a release mechanism comprising a first coupling part; a second coupling part; clasping means adapted to receive and releasably retain said second coupling



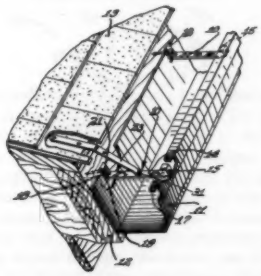
part; directly manually operable release means for effecting release of said clasping means being provided on the first coupling part; and second release means also for releasing said clasping means; a remotely positioned release member; said second release means being arranged to operate in response to pressure fluid on actuation of said remotely positioned release member.

3,737,127

GUTTER BRACKET

John E. Maloney, Jr., Addison, and Richard F. Zaccagni, Lombard, both of Ill., assignors to ZMC, Inc., Addison, Ill.

Filed Oct. 15, 1970, Ser. No. 80,928
Int. Cl. E04d *13/06*
U.S. Cl. 248—48.2 **11 Claims**



A gutter hanger bracket comprising a bracket body which engages with the opposite sides of an eaves trough, and has a strap quickly manually connectable therewith by means of a T-head on the strap fitting in an eye slot with which it is assembled and locked by a simple inserting and turning motion. Special reinforcement enhances use of low cost non-rusting metal such as aluminum. Installation is assisted by an efficient trough-gripping structure.

3,737,128

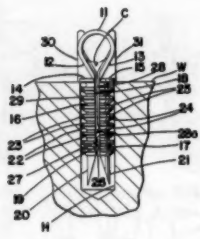
CABLE SUPPORT CLIP

Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners Inc., Lorain, Ohio

Filed Oct. 20, 1971, Ser. No. 190,726
Int. Cl. F16b *15/02*
U.S. Cl. 248—71 **10 Claims**

A cable support clip is provided, which is especially adapted for securement in a blind hole in concrete, wood or other solid

material. It is provided with flexible fins or like means which facilitate entry of the shank portions of the clip in the hole, and resist removal of the clip from the hole; has novel means for interlocking the shank portions together to prevent axial



movement thereof relatively to each other, and is provided with means for avoiding distortion of or damage to the head of the clip or to the cable during insertion of the clip in the blind hole.

3,737,129

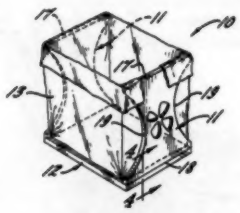
STAND FOR SUPPORTING BAGS AND THE LIKE

John A. Foster, Rockford, Ill., assignor to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed Dec. 10, 1971, Ser. No. 206,751

Int. Cl. B65b 67/00

U.S. Cl. 248—97 **9 Claims**



A U-shaped stand for supporting a flexible garbage bag and having side panels formed with keys which releasably interlock with keyways in a base to hold the stand rigidly assembled while permitting easy disassembly of the stand.

3,737,130

HYDRAULICALLY OPERATED TRIPOD HEAD

Yukinobu Shiraishi, Tokyo, Japan, assignor to Slick Tripod Co., Ltd., Saitama-ken, Japan

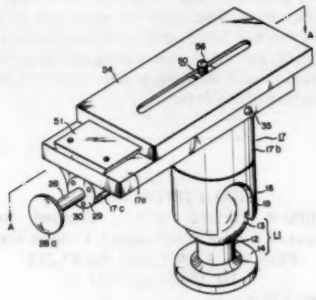
Filed Oct. 7, 1970, Ser. No. 78,895

Claims priority, application Japan, June 25, 1970, 45/73958; June 25, 1970, 45/73959

Int. Cl. F16m 11/04

U.S. Cl. 248—181 **7 Claims**

A tripod head comprises a head body and a hydraulic mechanism with a plurality of interconnected cylinders which normally fixes the head body to the support and, when operated, permits the same to be turned to any desired position with respect to the support. The tripod head is further



provided on the head body with a fixing attachment for mounting a camera or the like in any desired lengthwise position on the head body.

3,737,131

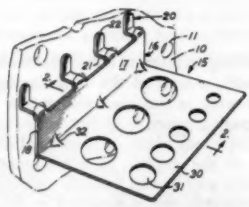
ARTICLE SUPPORT CONSTRUCTION

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed June 6, 1968, Ser. No. 735,069

Int. Cl. A47g 23/02

U.S. Cl. 248—223 **3 Claims**



The article support construction is for use on a pegboard and comprises a base, a plurality of mounting prongs on the upper edge of the base each including a rearwardly-extending first finger and an upwardly-extending second finger on the rear end of the first finger and disposed normal thereto, a plate integral with the lower edge of the base and directed normal to the base and having an opening therein, the first and second fingers co-operating to mount the plate on the pegboard, whereby the opening can receive the shank of a headed tool with the head thereof being supported on the plate.

3,737,132

ADJUSTABLE SLAB FORM SUPPORT FOR BRIDGE DECKING OR THE LIKE

Irving Roth, Elmont, N.Y., assignor to Slattery Associates, Inc., Maspeth, N.Y.

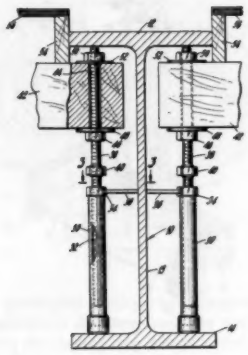
Filed Nov. 10, 1971, Ser. No. 199,072

Int. Cl. E04g 17/18

U.S. Cl. 248—228 **5 Claims**

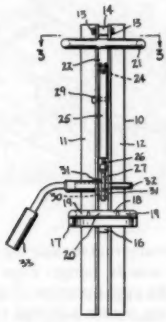
A tubular member having an internal thread is mounted on the lower flange of an I-beam. The lower end of a threaded rod

is positioned within the tubular member while the upper end of the threaded rod passes through a joist and is secured thereto for supporting the forms in which concrete is to be



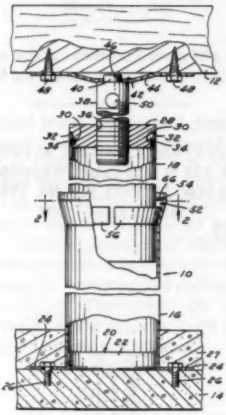
poured. An adjusting nut and a lock nut are mounted on the threaded rod so that the height of the joist may be varied with respect to the flanges of the I-beam.

3,737,133
QUICK-RELEASE ARTICLE HOLDER
Allan J. Boecker, Orange, Calif., assignor to Akron Brass Company, Wooster, Ohio
Filed Nov. 16, 1970, Ser. No. 89,855
Int. Cl. A62c *39/00*
U.S. Cl. 248—313 **9 Claims**



A quick-release article holder adapted for mounting on a vertical surface and having a bifurcated lower support member and a spaced upper clamping member which is pivotally mounted for rotative movement into or out of engagement with the upper portion of the article to be held. The holder is particularly adapted for use in retaining cylindrical breathing apparatus which is mounted on the wall of a fire station or on a panel of a mobile fire apparatus and serves to retain and support the breathing apparatus when it is not in use or while it is being harnessed to the back of the user. A lever-operated linkage serves to pivot the upper retaining member out of clamping engagement with the apparatus so that the entire breathing apparatus can be moved horizontally away from the holder by the action of the user walking away from the holder after the breathing apparatus has been harnessed to his back. The breathing apparatus can be restored to the holder by reversing the removal procedure and moving the upper clamping member back into locking engagement with the upper part of the breathing apparatus. Adjustable features are provided for varying the spacing between the upper and lower members, changing the position of the upper member at its limits of pivotal movement and maintaining a spring-loaded clamping force on the upper member.

3,737,134
TELESCOPING SUPPORT COLUMN
Alvin N. Foon, Southfield, Mich., assignor to AFCO Manufacturing Corp., Holly, Mich.
Filed June 18, 1971, Ser. No. 154,282
Int. Cl. E04g *25/04*
U.S. Cl. 248—354 R **2 Claims**

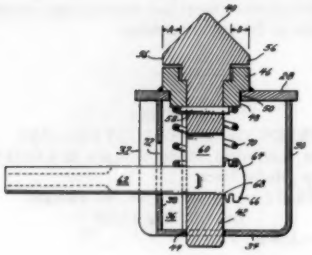


A support column having an upper inner sleeve and a lower outer sleeve arranged in telescopic fashion for vertically supporting a floor support beam from a footing spaced therebelow. A plurality of arcuate wedges are circumferentially arranged between an upwardly flared-out portion of the outer sleeve and the outer surface of the inner sleeve. The initially collapsed column is extended between the footing and the beam so that a beam support member on the upper end of the inner sleeve engages the beam, and a floor support member on the lower end of the outer sleeve engages the footing. With the column so arranged, a vertical adjustment screw is actuated to produce a telescopic retraction force on the two sleeves which causes the wedges to become wedged between the two sleeves with serrated edges on the inner surfaces of the wedges biting into the inner sleeve to transfer the axial load from the inner sleeve to the outer sleeve and thereby support the beam. The screw may then be further adjusted to level the beam as required.

3,737,135
LOCKING DEVICE
William A. Bertolini, Kinnelon, N.J., assignor to Bertolini Engineering Co., Inc., Kinnelon, N.J.
Filed Sept. 20, 1971, Ser. No. 181,921
Int. Cl. B65j *1/22*
U.S. Cl. 248—361 R **9 Claims**

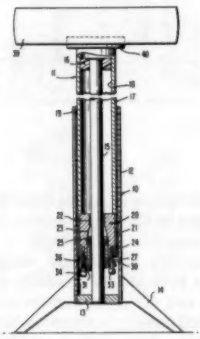
A 90° rotatable lock member is disclosed for releasably locking a container to the bolster of a chassis. The lock

member shank has upper and lower bearing supports and is provided with an offset captive, but removable, handle. The



handle has open and closed positions and is spring-biased into niches defining each of said positions for the handle.

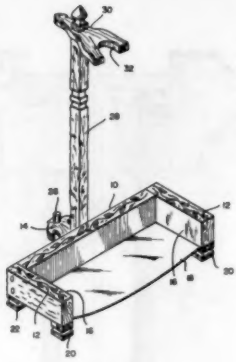
3,737,136
ADJUSTABLE HEIGHT SUPPORT
Gordon R. Snurr, 520 W. 6th Street, Waynesboro, Pa.
Filed Mar. 29, 1972, Ser. No. 239,035
Int. Cl. E04g *25/08*
U.S. Cl. 248—412 **11 Claims**



An adjustable height support for furniture and the like features a ball wedge positive lock between the two relatively linearly movable units of the support structure. A retarder or drag device between the relatively movable units is activated in the locking engagement preliminary to the positive engagement of the ball wedge lock. Height adjustment is infinite so as to increments of adjustment and locking is substantially instantaneous.

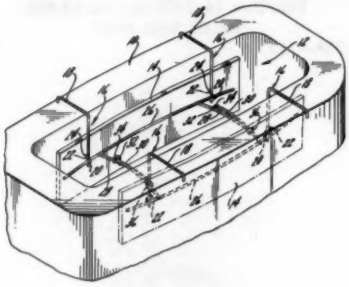
3,737,137
STAND FOR SUPPORTING GUITAR
Elizabeth R. Sheehan, Saint Petersburg, Fla., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed July 28, 1971, Ser. No. 166,700
Int. Cl. A47b *97/04*
U.S. Cl. 248—441 **3 Claims**

A stand for detachably supporting an acoustic guitar in not quite vertical position comprising a base having an opening with a sling therein and an upwardly and inclinedly extending bar connected by means at its bottom end to the periphery of



the base, the top end having a bifurcated member extending forwardly over the base at right angles to the bar.

3,737,138
APPARATUS FOR LOCKING HOT TOPS
Daniel P. Gregan, Cleveland, Ohio, assignor to Foseco International Limited, Birmingham, England
Filed Sept. 13, 1971, Ser. No. 179,693
Int. Cl. B22d *7/10*
U.S. Cl. 249—197 **7 Claims**

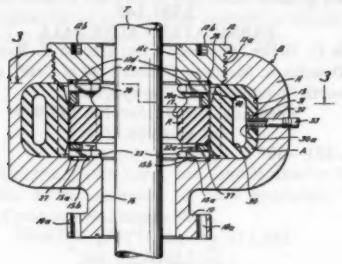


A hot top for a generally rectangular ingot mold comprising at least a pair of side boards, hanger clips for suspending the side boards adjacent the upper portion of opposite sides of the ingot mold, and locking means adapted to forcibly hold the side boards to the sides of the mold. The locking means include generally horizontal elongated members having generally perpendicularly disposed locking arms attached thereto, and adapted to interlock with one another in a manner which applies forces that hold the side boards firmly to the sides of the mold.

3,737,139
ANNULAR BLOWOUT PREVENTER
John D. Watts, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Filed June 28, 1971, Ser. No. 157,466
Int. Cl. E21b *33/06;* **F16k** *7/07*
U.S. Cl. 251—1 **3 Claims**

An annular blowout preventer having a resilient sealing ring with an inner bore through which well tools and the like may pass when the sealing ring is in the open position and which is compressible to smaller diameters for packing off around a

drill string or the like, or even to fully close the bore, wherein the sealing ring is molded or is otherwise connected with confining upper and lower wedge members, and is actuated by an



inflatable bag preferably having rigid confining strips which bridge the longitudinal distance from the upper to the lower wedges, whereby the sealing ring is substantially fully confined except at the sealing area of its inner bore.

3,737,140

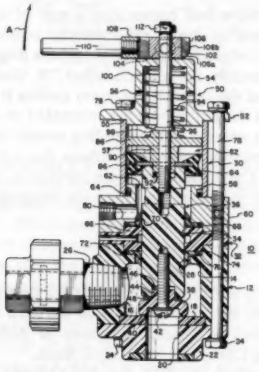
DUAL CONTROLLED VALVE ASSEMBLY

Alex Toth, Lincolnwood, Ill., assignor to Ellis Corporation, Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 177,962

Int. Cl. F16k *31/143*

U.S. Cl. 251—14 **7 Claims**



A dual controlled valve assembly comprising a body defining a valve chamber having a valve seat therein. An actuating chamber is provided adjacent the valve chamber, and detachable wall means defining port means therein separates the valve body and the actuating chamber. The valve member is carried in said chamber movable to open and close against the valve seat, and an elongated valve stem supporting the valve extends through the port means into the actuating chamber. Piston means is connected to the stem and mounted for movement in the actuating chamber between opposite ends for opening and closing the valve. Inlet means is provided for introducing pressurized fluid into at least one end of said actuating chamber for acting on the piston to move the stem in one direction. Biasing means urges the stem in an opposite direction, and manual operator means externally of the actuating chamber is provided for axially moving the stem against the force of the biasing means thereon between a first stable position exerting no force in opposition to said biasing means and a second stable position opposing said biasing means to maintain the valve member in a fixed position in relation to the valve seat.

3,737,141

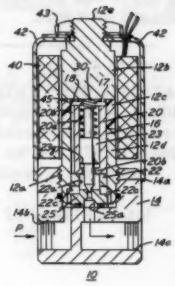
NORMALLY CLOSED SOLENOID OPERATED VALVE

Kenneth W. Zeuner, Newtown, Pa., assignor to Control Concepts Inc., Richboro, Pa.

Filed Apr. 13, 1972, Ser. No. 243,633

Int. Cl. F16k *31/06*

U.S. Cl. 251—129 **9 Claims**



A normally closed solenoid operated poppet valve having an armature with a section which engages and pulls the poppet out of an orifice to control fluid flow. A pole piece surface forms a first air gap with the armature and a second air gap with the poppet when the valve is in its normally closed state. The second air gap is substantially greater in magnitude than the first air gap. Upon application of electromagnetic flux lines there is an attractive force between the armature and the pole piece attracting the armature and pulling the poppet to a partially open position. Thereafter, the attractive force between the poppet and pole piece attracts the poppet away from the orifice to the valve open state.

3,737,142

ROTARY VALVE OPERATOR

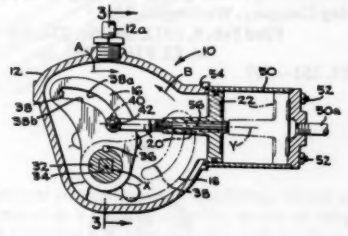
Howard G. Boswell, 2317 Persa, Houston, Tex., and Charles C. Partridge, 7937 Turquoise, Houston, Tex.

Continuation-in-part of Ser. No. 835,603, June 23, 1969, abandoned. This application July 8, 1971, Ser. No. 160,696

Claims priority, application Germany, Jan. 20, 1971, P 21 02 441.9

Int. Cl. F16k *31/16*

U.S. Cl. 251—58 **13 Claims**



An operator for opening and closing a butterfly or other rotary valve. The operator is powered by a fluid cylinder with a reciprocating piston that is connected to a lever secured to the valve's stem, which lever converts the piston's rectilinear movement into rotary motion to rotate the valve's flow control element between its open and closed positions. The lever has an arcuate slot in the configuration of an involute curve in order that the piston's force always is applied at a right angle to the slot's surfaces, thereby precluding side loads and other undesired lateral forces on the piston, lever, and valve stem

from arising. The operator includes a housing in which the remaining components are enclosed, and which serves as a means for mounting the operator on the body of a valve, a bearing for the lever's shaft, a guide for a pin and clevis interconnecting the piston and the lever, a mount for the power cylinder, and a pressure vessel forming one end of the cylinder. The operator is structured so that cylinders of various sizes can be quickly and interchangeably connected to it, thereby facilitating use of one size of operator with a wide range of line pressure and valve sizes.

3,737,143

PNEUMATICALLY OPERATED TIMER

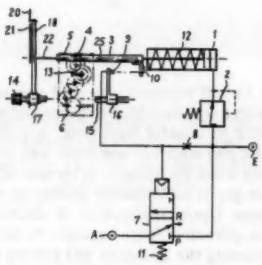
Karl Hodler, Buttikon A.G., Switzerland, assignor to H. Kuhnke Electrokechnik GmbH, Brunishalde, Switzerland

Filed Jan. 17, 1972, Ser. No. 218,263

Claims priority, application Germany, Jan. 20, 1971, P 2102 441.9

Int. Cl. F16k *31/12*

U.S. Cl. 251—28 **10 Claims**



A timer for use in delaying the actuation of a pneumatically operated valve in which a pneumatic signal first causes a rack to be moved and teeth on the rack to drive a rotatable speed governor, whereby the speed of movement of the rack, which carries a valve operating member, is controlled to control the time taken for the member to reach a position in which the valve is operated to transmit the signal. Means is provided for restoring the rack to an initial position upon cessation of the pneumatic signal.

3,737,144

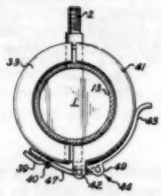
BUTTERFLY VALVE

Leon L. Duncan, Washington, Mo., assignor to Zero Manufacturing Company, Washington, Mo.

Filed Feb. 9, 1972, Ser. No. 224,770

Int. Cl. F16k *1/22*

U.S. Cl. 251—307 **9 Claims**



A butterfly valve has a turntable disc within a resilient, tubular seat member, the latter forming part of a conduit. The entire unit can be quickly disassembled for cleaning by detaching a segmented clamp which normally connects the tubular member with circular couplers at each side of the seat member. The couplers have grooves to receive raised ribs on each side of the tubular seat so that a tight seal can be formed. The clamp compresses the resilient tubular seat to insure a seal for the disc when the latter is turned to close the valve.

3,737,145

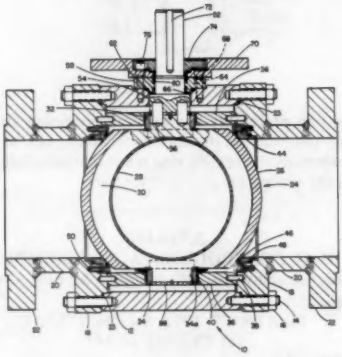
FABRICATED VALVE BALL

Kenneth G. Heller, Redwood City; Harold T. Ray, Oakland, and Douglas A. Martens, Concord, all of Calif., assignors to Walworth Company, Bala Cynwyd, Pa.

Filed Aug. 2, 1971, Ser. No. 168,079

Int. Cl. F16k *5/02*

U.S. Cl. 251—309 **4 Claims**



A fabricated valve ball comprising a pair of hemispherical shell members and an inner, rigid annular reinforcing beam, with the circular edges of the shell members disposed around it and spaced axially from each other. A thick weldment deposited around the reinforcing beam unifies it with the circular edges. The shell members are truncated at diametrically opposite sides by annular cuts extending axially into the beam, whereby diametrically opposed portions thereof protrude as trunnion cores. Cylindrical caps are welded to the trunnion cores to function as trunnions which are integral with the annular beam.

3,737,146

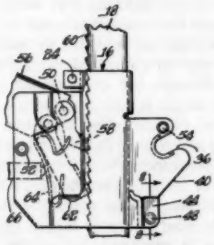
JACK AND METHOD OF MAKING THE SAME

Robert H. Potter, Benton Harbor, and Bernard F. Ladewski, St. Joseph, both of Mich., assignors to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Feb. 4, 1971, Ser. No. 112,554

Int. Cl. B66f *1/04*

U.S. Cl. 254—108 **4 Claims**



A vehicle jack has a housing with opposed walls and pins extending between the walls and with one of the pins supporting a jack handle socket and a lifting pawl. The housing is in two

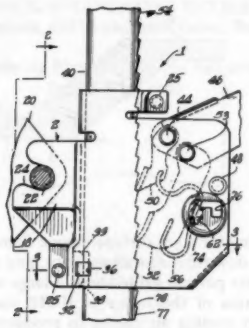
halves and is assembled by inserting the pins through one housing half, then deforming the material around each pin hole to hold the pins rigidly in place, then assembling the jack operating mechanism and related parts with the housing half, and then assembling the other housing half with the pins and upsetting the ends of the pins at said other housing half. The method is applicable as well to other assemblies wherein cross pins are used to hold opposed members together.

3,737,147

VEHICLE JACK

George H. Morgan, South Bend, Ind., and R. Harlan Nehrig, Stevensville, Mich., assignors to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Feb. 4, 1971, Ser. No. 112,555
Int. Cl. B66f 1/04
U.S. Cl. 254—108 **12 Claims**



A vehicle jack has a housing slidable on a tubular column. A plastic guide in the housing a retained therein by tabs that project through the housing sides forms a bearing that slides on the column. The housing has a pawl mechanism, the operation of which is determined by the operative condition of the pawl spring so that the housing may be selectively raised or lowered on the column. A direction-setting lever, which determines the operative condition of the pawl spring, is pivoted to the housing and has a concave seat that substantially prevents lateral movement of the spring during the operation of the pawl mechanism and also is of such size as to cause the lever to roll under the spring action and thereby prevent localized stress on the spring.

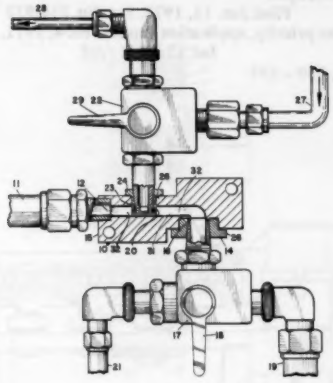
3,737,148

METHOD OF AND MIXER BLOCK FOR FEEDING A STREAM OF VISCOUS MATERIAL

Henry A. Phillips, 1340 New Brunswick Avenue, Piscataway, and Reynold E. Minnich, 1309 Washington Valley Road, Martinsville, both of N.J.

Filed Nov. 3, 1971, Ser. No. 195,213
Int. Cl. B01f 15/02
U.S. Cl. 259—4 **9 Claims**

A method of and mixer block for feeding a stream of viscous material into a mixer employing not rotating parts is disclosed. The mixer block has a cavity therein terminating in an outlet which feeds the raid mixer. A first inlet is provided into the cavity at a point displaced from the outlet end for introduction of a first viscous material while a second inlet is provided between the first inlet and the outlet to introduce the second viscous material into the interior of the flow of the first viscous material thereby presenting a coaxial stream of viscous material to the said mixer.

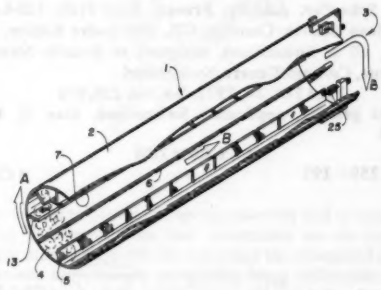


3,737,149

METHOD AND APPARATUS FOR MIXING BITUMINOUS MIXTURES

Emile Muntzer, and Paul Muntzer, both of Strasbourg, France, assignors to WIBAU, Westdeutsche Industrie-und Strassenbau-Maschinen-Gesellschaft m.b.H., Wibaustrasse, Germany

Filed Nov. 23, 1971, Ser. No. 201,494
Claims priority, application France, Dec. 2, 1970, 7043989
Int. Cl. B01f 9/04
U.S. Cl. 259—146 **19 Claims**

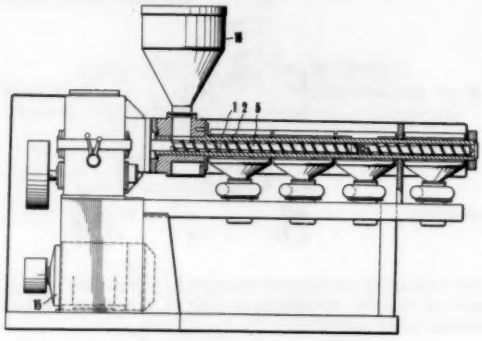


Granular mineral components and bituminous binder components are mixed in a rotating drum by means of longitudinally extending chains which rotate along with the drum and which repeatedly lift the materials to be mixed and drop these materials again downstream of the preceding lifting point and which chains on their returning leg in each revolution provide a self cleaning action by contacting the inner surface of the drum. The apparatus for performing this method comprises a plurality of chains extending longitudinally within the drum and connected thereto by means which permit an adjustment of the slack in the chains. Preferably, the links of the chains are plates which are hinged to each other and which are adjustable in their angular position relative to a radial plane of the drum.

3,737,150
SCREW EXTRUDER

Naoji Otake, No. 11-17, 7-chome, Shibamata, Katsushika-ku, Tokyo, Japan

Filed Jan. 11, 1972, Ser. No. 216,932
Claims priority, application Japan, Feb. 4, 1971, 46/4005
Int. Cl. B01f 7/08
U.S. Cl. 259—191 4 Claims

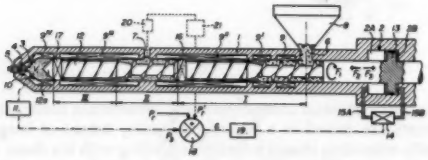


In a screw extruder of the type including a cylinder and a rotary screw contained in the cylinder and adapted to extrude molten material, a notch is provided for the helical vane of the screw, a vent tube is provided to extend through the wall of the cylinder at a portion corresponding to the notch, the inner end of the vent tube is terminated closely adjacent to the peripheral surface of the shaft of the screw and a second notch is formed on the inner end of the vent tube in the direction of extrusion of the molten material.

3,737,151
INJECTION PRESS

Gerard Schaeffer, Ambilly, France; Jean Trub, GD-Lancy, GE; Jean Bouvet, Carouge, GE, and Andre Kohler, Delemont, all of Switzerland, assignors to Battelle Memorial Institute, Carouge/Genere, Switzerland

Filed Feb. 24, 1972, Ser. No. 228,970
Claims priority, application Switzerland, Mar. 5, 1971, 3208/71
Int. Cl. B01f 7/08
U.S. Cl. 259—191 3 Claims

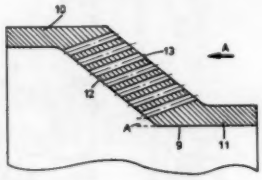


In an injection press for thermoplastic material of the type having a heated cylinder containing a feed screw rotatably and axially movably mounted in the cylinder for mixing, pressurizing and feeding the thermoplastic material from a feed hopper to a mould at the opposite end of the feed screw, a restriction at the cylinder end adjacent the mould, the end of the feed screw adjacent the restriction having a shape complementary to the restricted end of the cylinder, the improvement comprising a back pressure adjusting device arranged between a first longitudinal zone of the feed screw for introduction and plasticization of the thermoplastic material and a second zone for degassing the thermoplastic material by means of a degassing opening, and a device for adjusting the axial movement of the feed screw during the plasticization and compression of the thermoplastic material as a function of the pressure in the cylinder zone between its restricted end and the end of the feed screw.

3,737,152
COOLING OF HOT FLUID DUCTS

John Dennis Wilson, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 17, 1972, Ser. No. 218,286
Claims priority, application Great Britain, Jan. 25, 1971, 3,053/71
Int. Cl. F27d 9/00
U.S. Cl. 60—39.66 5 Claims

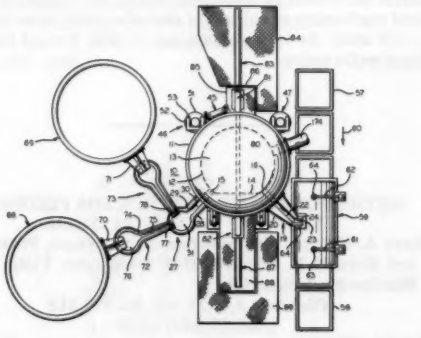


A cooling ring for a gas turbine engine flame tube connects upstream and downstream wall sections, and includes a conical intermediate portion drilled with a large number of holes having diameters of the order of 0.010 ins. to 0.020 ins. through which cooling air passes to produce a cooling film over the hot surface of the flame tube.

3,737,153
MOLTEN METAL HOLDING FURNACE SYSTEM

Theodore J. Steffora, Allison Park, and Eberhard G. Schempp, Pittsburgh, both of Pa., assignors to Lectromelt Corporation, Pittsburgh, Pa.

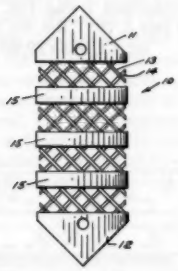
Filed Oct. 1, 9171, Ser. No. 185,663
Int. Cl. C21c 7/00
U.S. Cl. 266—39 10 Claims



A furnace vessel comprises a vertically oriented refractory lined cylindrical metal shell and a cover. The interior bottom of the vessel is dished and there are circumferentially spaced orifices through the wall of the vessel at the edge of the dish. A

channeled molten metal receiving spout connects with one of the orifices and a pouring spout connects with the other. A riser on the receiving spout permits pouring metal into the vessel even when it is tilted for discharging metal from the pouring spout. The tilting axis of the vessel is on a side thereof, and, if extrapolated, the axis will pass through the tip of the pouring spout in which case the tip will not ascend or descend appreciably when the vessel is tilted. The vessel is adapted for holding, reducing, alloying, degassing, vacuum treatment and introducing additives to molten metal during the interval between melting and utilization of the metal. The argon-oxygen stainless steel refining process can also be carried out in the vessel. Continuous casting machinery is also furnished with molten metal from the vessel. The temperature of the metal in the furnace is maintained by heat radiated from an electrically resistive graphite rod which extends across the interior of the furnace above the metal level.

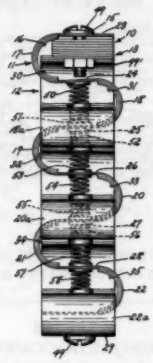
3,737,154
SHOCK ATTENUATING DEVICE
Kenneth W. Johnson, 4113 Lakeshore Drive, Route 1, Jamestown, Ohio
Filed July 12, 1971, Ser. No. 161,619
Int. Cl. F16f 1/40
U.S. Cl. 267—153 **5 Claims**



A shock attenuating device having an elastomeric member which is disposed within an opening formed between interconnected linkage members and is compressed by the linkage members upon relative movement therebetween. If desired, the device may also include friction damping means and/or viscous damping means.

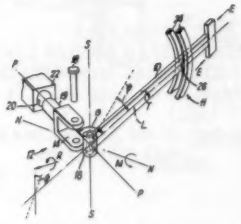
3,737,155
COMBINATION VIBRATION ISOLATOR AND SHOCK ABSORBER
Jac H. Karlan, 5992 Netherland Avenue, Riverdale, N.Y.
Filed June 21, 1971, Ser. No. 154,747
Int. Cl. F16f 7/00
U.S. Cl. 267—136 **9 Claims**

A combination vibration isolator and shock absorber including a plurality of elongated resilient elements, each of said elements including a plurality of planar segments interconnected by a plurality of C-shaped segments, said plurality of resilient elements being coaxially mutually engaged to provide linear stiffness, each of said resilient elements having first and second aligned free ends, said ends being interconnected by end pieces, each of which have a natural vibrating frequency differing from any of the components of said elongated elements. Said C-shaped segments are provided with additional



structure to alter their natural vibration frequency, as compared with the planar segments.

3,737,156
V-TYPE TORSION BAR TILLAGE TINES
Walter H. Ward, Vereenigning, Transvaal, Republic of South Africa, assignor to South African Farm Implement Manufacturers Limited, Vereeniging, Transvaal, Republic of South Africa
Filed Oct. 8, 1971, Ser. No. 187,664
Int. Cl. F16f 1/16
U.S. Cl. 267—154 **29 Claims**

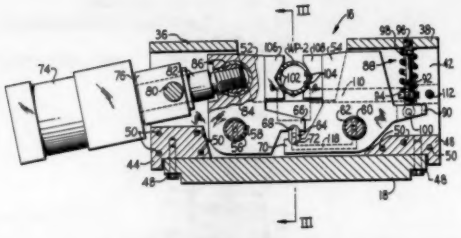


The invention provides a spring assembly and an energy absorbing linkage wherein end constraints on an elongated resilient member are effective to place the elongated member in torsion, such torsion permitting large deflections of the spring or linkage while maintaining a relatively low stress level in the resilient member. The spring assembly can be conveniently made in the form of an energy linkage unit, such a unit being suitable for building planar or lattice spring structure, or for use in an installation as a means of alternatively storing and releasing energy.

3,737,157
CLAMPING DEVICE
Josef Kiwalle, Peoria, Ill., assignor to Production Technology Inc., Peoria, Ill.
Filed Apr. 21, 1971, Ser. No. 136,129
Int. Cl. B25b 1/04, 1/18
U.S. Cl. 269—31 **2 Claims**

A clamping device holds a workpiece against rotary motion while a welding operation is performed on the workpiece. The clamping force is exerted on the workpiece by a pair of op-

posed pivotally supported clamping arms activated by a single fluid cylinder which has the piston rod of the cylinder attached



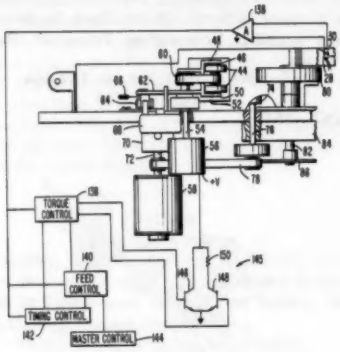
to one of the clamping arms. the other clamping arm is moved by a drive connection between the two arms.

3,737,158

CONTROLLED TORQUE DOCUMENT FEED SYSTEM

Jack Beery, Farmington, and Donald C. Russell, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 17, 1971, Ser. No. 181,525
Int. Cl. B65h *3/06, 5/06*
U.S. Cl. 271—10 **10 Claims**



There is disclosed herein a portion of a document transport system including a document storage hopper, a document feeding unit, a document separator and a control system for varying the feeding of a document. A document is removed from the hopper by a motor driven feed member and placed or moved into a document guideway. To initially remove the document from the hopper, a high torque output from the motor is desired and when the document is being moved along a document guideway a lower torque is required.

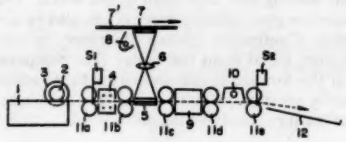
3,737,159

APPARATUS FOR PREVENTING SUCCESSIVE JAMMING OF COPY SHEETS IN COPYING APPARATUS

Takaji Washio, and Tatsuo Aizawa, both of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed June 1, 1971, Ser. No. 148,804
Int. Cl. B65h *7/02*
U.S. Cl. 271—57 **10 Claims**

Apparatus for preventing successive jamming of copy sheets in copying apparatus including a detecting machine generating a first signal in response to delivery of a copy sheet at the initial nip of a forwarding mechanism of the copying apparatus by a copy sheet feeding mechanism, another detecting mechanism generating a second signal in response to the arrival of a copy sheet at a discharge nip of the forwarding mechanism, and a control switch mechanism responsive to the first and second signals to inhibit operation of the copy sheet feeding mechanism when in a first state responsive to the first signal and to enable operation of the copy sheet feeding



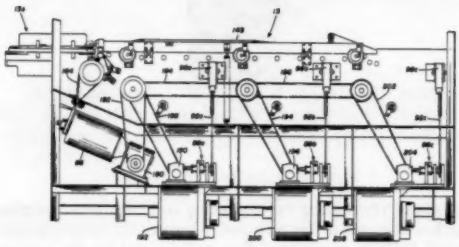
mechanism in response to the second signal such that the copy sheet feeding mechanism is inhibited when a copy sheet is in a forwarding passage of the copying apparatus to prevent successive jamming of the copy sheets. The control switch mechanism is essentially a bistable circuit switching states in response to the first and second signals and various control mechanism are disclosed utilizing relays, semi-conductor devices, gas tubes and combinations thereof.

3,737,160

DOCUMENT STACKER SYSTEM

William C. Monday, Garland, Tex., assignor to Recognition Equipment, Incorporated, Irving, Tex.

Filed July 2, 1971, Ser. No. 159,216
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 **16 Claims**



The specification discloses a document stacker system which may accommodate various sizes of documents which flow at a variable frequency. The stacker system includes a rest station which includes a set of fingers upstanding in the path of travel of incoming documents in order to arrest the movement of the documents. Springs urge the documents downward to engage the fingers. Cans are disposed between the fingers to periodically raise the end of the document arrested by the fingers above the fingers. A pair of resilient rollers are synchronized with the cams to contact the top and bottom surfaces of the document raised by the cams. A transport then receives the document from the pair of rollers for delivery to various stacker receptacles. Each stacker receptacle includes a paddle which is movable vertically within the receptacle for supporting a document stack. A motor is operable to drive the paddle to a desired level within a receptacle in accordance with the sensed height of the document stack within the receptacle. A one-way clutch prevents downward movement of the paddle unless positive drive is provided from the motor, such that the operation of the paddle is substantially independent of the weight of the documents thereupon.

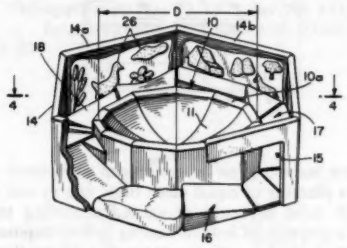
ERRATUM

For Class 272—56.5 see:
Patent No. 3,736,847

3,737,161
ENVIRONMENTAL PLAYGROUND FOR HANDICAPPED CHILDREN

Marvin A. Taylor, and Janet Louise Taylor, both of 4920 Dixie Drive, San Diego, Calif.

Filed Aug. 9, 1972, Ser. No. 279,209
Int. Cl. A63b *71/00*
U.S. Cl. 272—60 **5 Claims**

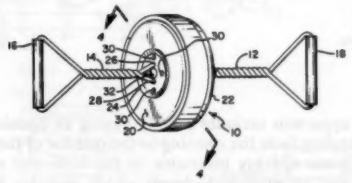


A central bowl of soft resilient material defining a concave tumbling area is surrounded by an outer wall to define an annular passageway between the exterior of the bowl and the inside wall surfaces of the surrounding outer wall. The annular passageway includes various three dimensional members of soft resilient materials similar to pillows of varying shapes. These members define an obstacle course for children circling around the central bowl. The inner surfaces of the surrounding wall may include textured designs in relief to provide tactual and visual stimulation. The central bowl serves as a "social center" for the children at play.

3,737,162
EXERCISE DEVICE

Lee Wood, Box 218, Savage, Minn.

Filed Dec. 6, 1971, Ser. No. 205,008
Int. Cl. A63b *21/00, 23/00*
U.S. Cl. 272—68 **6 Claims**

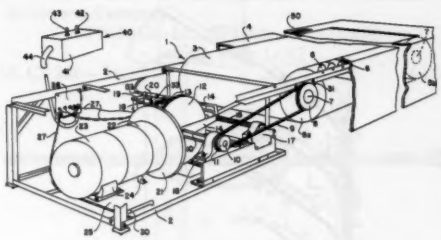


An Exercise Device for exercising various portions of the body is described, the Exercise Device including a cyclically spinning member, the member caused to spin in opposite directions of rotation by means of the axially induced twisting of spaced cords, the reversing directions of spinning being caused by the user applying pressure outwardly on the cords, and alternately releasing the pressure. Apparatus is illustrated for varying the tension that is required on the wound cords in order to cause the reversing rotation. An arrangement for compression and relaxation exercise is also described.

3,737,163
TREADMILL EXERCISING MACHINE

Dale A. Sumrall, 3219 Dearborn Street, Shreveport, La.

Filed Aug. 17, 1970, Ser. No. 64,371
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **2 Claims**

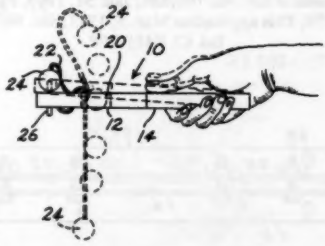


An exercising machine designed to provide maximum flexibility and safety in walking or running activity, which includes an endless belt mounted on a frame, the belt being driven by a novel drive system which may be controlled by the user as he exercises. The drive system is basically composed of a drive wheel-friction wheel combination interrelated in such a manner as to provide speed control over an essentially infinite range of selected speeds with smooth speed transition. The drive wheel and friction wheel cause movement of the endless belt when they are in contact with one another. They may be disengaged only when the belt is being driven at the minimum speed of the range of selected speeds. A series of pressure switches protects against disengagement of the drive wheel and friction wheel when the belt is at the maximum speed.

3,737,164
TETHER BALL PADDLE HAVING LAUNCHING STATIONS ON EACH FACE

Jay W. De Yoe, Jr., 1444 Rogue River Highway, Gold Hill, Oreg.

Filed Apr. 19, 1972, Ser. No. 245,405
Int. Cl. A63b *71/04*
U.S. Cl. 273—98 **4 Claims**

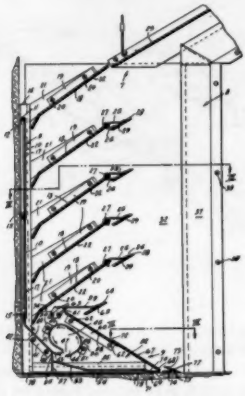


A tether ball toy is provided consisting of a board having a target hole through it, and equipped with a handle. A ball is tethered at a point within the target hole and a single holder is provided on each side of the board for defining a launching site. By tethering the ball to a point within the target hole, and duplicating the launching arrangement, the ball is made playable from either side of the board. The target hole is preferably placed between the launching site and the handle.

3,737,165
SHOOTING RANGE BULLET TRAP STRUCTURE

Giedrius Pencyla, Oak Park, Ill., assignor to Kory Industries, Inc., Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,180
Int. Cl. F41j 1/20
U.S. Cl. 273—102.4 28 Claims

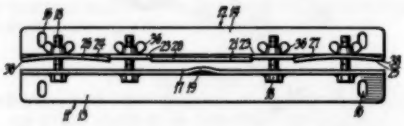


Freedom from exposed partition edges is attained by means of concealed cantilever supporting bracket arm structure on one or more vertical bars behind and in supporting relation to downwardly and rearwardly oblique deflector plates located forwardly from back plate means with which a downward bullet chute is provided to a spent bullet chamber defined behind upwardly and rearwardly sloping bottom plates. A bullet deenergizing device within the upper rear portion of the spent bullet chamber receives bullets deflected into a downward opening from which the spent bullets drop into the chamber. Great flexibility for multi-section installations is afforded, with unusually ample tolerance allowances for dimensional variations in the available space for the installation, and assured assembly stability.

3,737,166
TARGET HOLDER RIGIDLY SECURING SMALL ARMS TARGET AND TRANSDUCER MOUNTED THEREON

Lindsay Charles Knight, 426 Tarakan Avenue, Wales, Australia

Division of Ser. No. 795,639, Jan. 31, 1969, Pat. No. 3,682,478. This application Mar. 5, 1971, Ser. No. 121,499
Int. Cl. F41j 5/04
U.S. Cl. 273—102.2 S 11 Claims

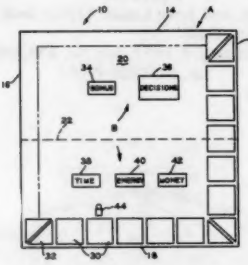


A target holder and transducer for rigidly holding a small arms target and registering the number of projections accurately hitting the target. The holder comprises elongated front and rear members having projections extending therefrom to secure and deform the target mounted therebetween in such a manner that the shock waves of a projectile hitting the target can be sensed by the transducer which is mounted on the target holder. The transducer includes an adjusting screw to vary the force necessary to close its contacts and signal a hit.

3,737,167
DECISION MAKING BOARD GAME APPARATUS

Karen A. Kelley, 8215 Fernhill Avenue, Parma, Ohio

Filed Feb. 22, 1971, Ser. No. 117,317
Int. Cl. A63f 3/00
U.S. Cl. 273—134 C 1 Claim

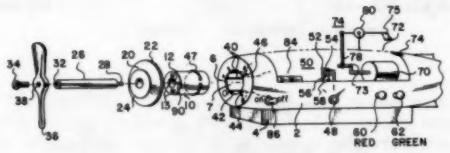


A decision making game wherein each participant is supplied with a plurality of equal value time, energy and money cards which must be spent or earned according to plays printed on a plurality of indicia bearing spaces disposed on a game board which the participants traverse during the game. Selected of the indicia bearing spaces require the participants to select a card from a plurality of decision cards having indicia thereon which generally provide for the expenditure or receipt of some of the time, money and energy cards. Equal value bonus cards are awarded when the participants draw selected of the decision cards or land on selected of the indicia bearing spaces while traversing the game board. The winner of the game is determined by a participant collecting a specified number of bonus cards without a corresponding required expenditure of all his time, money or energy cards.

3,737,168
ELECTRICAL GAME APPARATUS

Berl Driskill, 3110 Palmdale Circle, Dallas, Tex.

Filed Apr. 10, 1972, Ser. No. 242,683
Int. Cl. A63f 9/08
U.S. Cl. 273—156 12 Claims



Game apparatus includes a body having an opening and a bore extending from the opening to the interior of the body, a cylinder piece slidably insertable in the bore and rotatable therein, and an electrical circuit which includes first and second conductors disposed on the side wall of the bore, a third conductor disposed on the side wall of the cylinder piece, an electrically actuable indicator, first and second switches disposed on the end wall of the bore, and an option switch having first and second positions. Removal of the cylinder piece by sliding it from the bore after it has been rotated to any position within a certain range of positions causes the third conductor to simultaneously contact the first and second conductors and thereby actuate the indicator. Removal of the cylinder piece after it has been rotated to any position within a second range of positions results in the third conductor contacting only the first conductor so that the in-

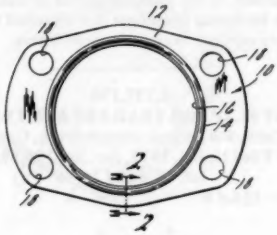
dicator is not actuated. After removal of the cylinder piece, the first and second switches may be manually operated. Operation of the first switch when the option switch is in the first position causes actuation of the indicator whereas operation of the second switch when the option switch is in the first position disables the indicator. When the option switch is in the second position, operation of the first switch disables the indicator and operation of the second switch actuates the indicator.

3,737,169

GASKET MATERIAL AND METHOD OF MAKING SAME

David P. Glynn, Framingham, Mass., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 868,381, Oct. 22, 1969, abandoned.
This application May 13, 1971, Ser. No. 143,197
Int. Cl. F16j *15/32*; B32b *19/00, 27/40*
U.S. Cl. 277—235 B 6 Claims



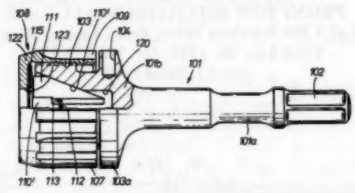
A gasket material comprising a base material of substantially uniform thickness and deformability cut in a desired configuration and having an elastomeric deformable bead deposited on at least one face surface of the base material in a desired pattern and projecting outwardly of the plane of the base material.

3,737,170

CHUCK FOR HAMMER DRILLS OR THE LIKE

Karl Wanner, Echterdingen; Manfred Bleicher; Horst Sigg, both of Stuttgart, and Max Burklin, Waldenbuch, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 9, 1970, Ser. No. 88,011
Claims priority, application Germany, Nov. 14, 1969, P 19 57 289.5
Int. Cl. B23b *31/04*
U.S. Cl. 279—60 7 Claims



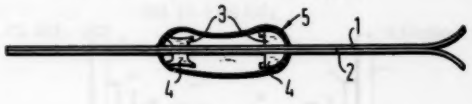
A self-centering drill chuck for use in hammer drills or like impact- and torque-transmitting machines. The shank of the boring or drilling tool is received between and is clamped by three jaws which are slidably guided in the pull-on nut or in the adapter of the chuck. A dished spring is inserted between the jaws and the adapter or nut to undergo deformation when the nut is rotated by a chuck key to thereby prevent a relaxation of the clamping force between the shank of the inserted tool and the jaws while the chuck rotates and receives axially oriented impacts.

3,737,171

PROTECTIVE ENCLOSURES FOR SKI BINDINGS

Herrmann Becker, 10 Miesingstrasse, 8166 Neuhaus near Schliersee, Germany

Filed Mar. 12, 1971, Ser. No. 123,676
Int. Cl. A63c *11/02*
U.S. Cl. 280—11.37 K 4 Claims



Where skis are transported in a fully exposed manner, e.g., on automotive vehicles, the bindings of the skis will be normally exposed to spray water droplets containing certain amounts of the salt used to cause snow and ice to melt on the roads. Therefore, there exists a risk of the ski bindings being subject to corrosion, such corrosion being apt to impair proper operation of the bindings which are intended to serve the purpose of safety devices. Moreover, it has been uncomfortable for skiers to carry unprotected skis on their shoulders, since snow is particularly apt to cling to the bindings, such snow being apt to melt while the skis are being carried, the resulting water draining from the skis and the bindings tending to wet the clothes of the skier. In order to remedy this condition, it is proposed, according to the invention, to enclose the portions of the skis which include the bindings in a tube-like enclosure which is preferably made of a suitable water-impermeable material. According to the invention, such an enclosure is preferably provided, at both ends, with sealing means which are adapted to snugly engage the respective portions of the skis in order to counteract any tendency of the enchosure to move out of position.

3,737,172

ARTICULATED AND STEERABLE SNOW SLED

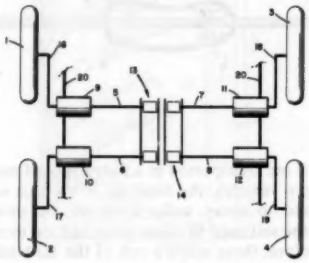
Clement Clement, 1833 rue Guimont, Trois-Riviere, Quebec, Canada

Filed Oct. 26, 1971, Ser. No. 192,505
Int. Cl. B62b *13/02*
U.S. Cl. 280—22 15 Claims

A snow sled composed of several flat boards pivotally connected to each other. A manually steering mechanism, as-

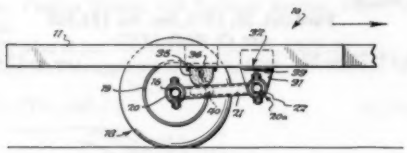
sociated with a cable system, is provided for steering the sled and giving to it the desired arcuate form when negociating curves. A braking system provides the braking of the sled.

3,737,173
TORSION BAR SUSPENSION SYSTEM
Lucien Albert Boissier, 36 rue Saint-Exupery, and Jean Joseph Barge, 89 rue Claude Bochard, both of Roanne, France
Filed Oct. 6, 1971, Ser. No. 187,004
Claims priority, application France, Oct. 6, 1970, 7036037
Int. Cl. B60g *19/02*
U.S. Cl. 280—104.5 R **3 Claims**



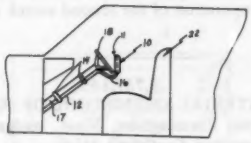
A torsion bar suspension system for vehicles, especially those used for transporting delicate cargo or cargo over rough surfaces. The four independently suspended wheels are mounted on lever arms and torsion bars. The two torsion bars on each side are connected to a deformable parallelogram so that upward movement of one wheel will exert a downward force on the other.

3,737,174
FULL AXLE COMPRESSION RUBBER SPRING SUSPENSION FOR VEHICLES
Albert F. Hickman, 8009 North State Road, Eden, N.Y.
Filed Apr. 13, 1971, Ser. No. 133,565
Int. Cl. B60g *11/22*
U.S. Cl. 280—124 B **6 Claims**



A full or through axle supported by rubber tired wheels has each end connected through a bearing to one end of a link extending lengthwise of the line of travel. The opposite end of each link is connected through another bearing to the frame and a suitable resilient spring support means is operatively interposed between the axle and frame. Each such bearing is constructed, as by inclusion of a flexible rubber bushing, to permit oscillation of its connected parts abouts its center. Drive and brake torque reactions, as well as axial movement of the axle laterally of the frame, are controlled by a torque arm projecting rigidly from the center of the axle and connected to the frame by a flexible joint or bearing which flexes to permit vertical movement of either or both axle ends relative to the frame or to the other axle end.

3,737,175
SAFETY APPARATUS FOR AUTOMOBILES
Edward H. Sahagian, 67 Chester St., Arlington, Mass.
Filed June 18, 1971, Ser. No. 154,472
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **4 Claims**

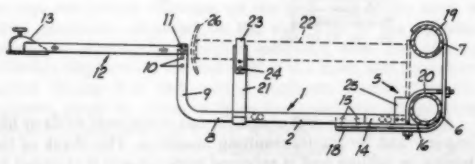


Safety apparatus for autos has a yieldable, protective member forward of an automobile seat and which a passenger seated thereon will strike when thrown forward, as in a collision or sudden stop. Mechanism attaches said bar, when it is in front of the driver, to the steering post of an auto, or when it is on front of a back seat passenger it is attached to an upstanding emergency support fixed to the auto frame.

3,737,176
DUST FLAP FOR TRAILERS AND TRUCKS
Richard D. Cobb, 940 Second Avenue South, Glasgow, Mont.
Filed Nov. 4, 1971, Ser. No. 195,595
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **1 Claim**

A flap for depending behind the wheels of a trailer or truck. The device is used in pairs and consists of a pair of hinged and spring loaded members, one of which is secured to the flap and prevents the flap from being torn from its mount when the rear wheels of the vehicle tend to climb a bumper when the vehicle is backed up.

3,737,177
FRONT TOW HITCH FOR SMALL CARS
Martin Gal, 1206 Burcham Drive, East Lansing, Mich.
Filed Aug. 26, 1971, Ser. No. 175,272
Int. Cl. B60d *1/00*
U.S. Cl. 280—495 **2 Claims**



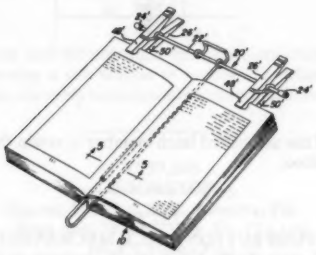
A frame consisting of laterally spaced side members with upturned front ends and connected by cross members has up-

turned rear hanger straps arranged to pass under and behind a lower torsion bar of the front wheel suspension of a small car. The upper ends of the hanger bars curve forwardly to engage over the top of the upper torsion bar of the suspension. L-shaped bolts pass through the hanger bars above and below the torsion bar to clamp the hanger bars to the bottom of the side members and secure the frame to the torsion bar. Thrust plates secured to the side member engage the front of the torsion bar. A towing hitch is pivotally connected to the upper ends of the L-shaped side members.

3,737,178
BOOK PAGE HOLDER

Donald F. Tjernlund, and Derrick M. Tjernlund, both of Box 58-A, R.D. No. 1, New Galilee, Pa.

Filed Sept. 20, 1971, Ser. No. 181,860
Int. Cl. B42d 9/00
U.S. Cl. 281—42 **8 Claims**

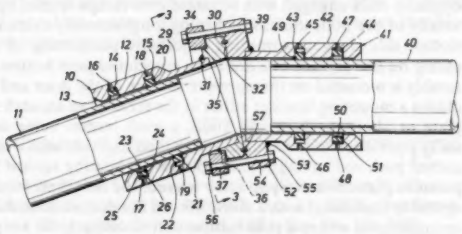


An elongated rigid support member generally cylindrical in cross-sectional shape and having a pair of clothespin-type clamps mounted thereon with the support member slidingly and rotatably received through the coiled portions of the butterfly springs of the clamps. The jaw ends of the clamps poject outwardly from the same side of the support member and are to perform the funtion of clampingly engaging the pages of an open book to and in position overlying the front and back covers of the book. In addition, one form of the invention invulves an elongated book binding brace projecting outwardly of the same side of the elongated support member from which the jaw ends of the clamps project and underlies the outer surface of the bookbinding in a manner bowing the latter in the area of the open pages of the book thereby rendering the inner marginal edge portions of the open pages more easily readable.

3,737,179
SUBMARINE CONNECTION FOR MISALIGNED PIPES

William E. White, Jr., Houston, Tex., assignor to Hydrotech Services Inc., Houston, Tex.

Filed Jan. 20, 1972, Ser. No. 219,413
Int. Cl. F16l 17/00
U.S. Cl. 285—96 **3 Claims**

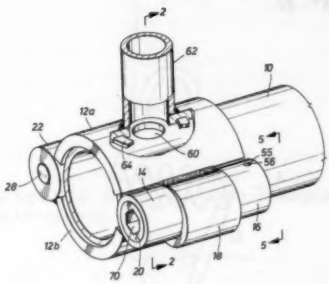


Apparatus for connecting together two pipes which are misaligned and which may be in a hostile environment, as for example, underwater. A pair of housings, each of which is arranged for slidable mounting over the adjacent pipe ends to be coupled, are each provided with a fluid actuatable, annular, radially movable resilient seal and gripping means arranged to engage the surface of the pipes. Adjacent ends of the housings carry bias flanges arranged for mating contact through a plurality of relative connector angular positions.

3,737,180
PIPE CLAMP

Thomas J. Hayes, Jr., and David L. Gruller, both of Houston, Tex., assignors to Kurier Corporation, Houston, Tex.

Filed Mar. 22, 1971, Ser. No. 126,843
Int. Cl. F16l 5/02
U.S. Cl. 285—197 **8 Claims**

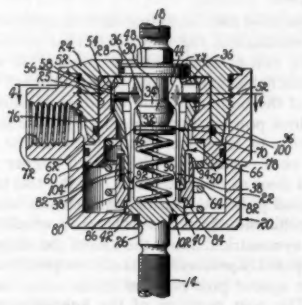


A tubular-shaped body is split longitudinally into two sections for positioning on opposite sides of a pipeline. A hinge is located on each side of the body for connecting the two sections along each side of the split for pivotal movement around axes that are parallel and that are parallel to the longitudinal axis of the pipeline. One of the hinges has a removable hinge pin to allow the two sections to be moved apart for placement around the pipeline. The other hinge has a hinge pin with an eccentric portion that will cause the two sections to clamp the pipeline between them when the pin is rotated.

3,737,181
DISCONNECT UNIT

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Paul Alexander, Jr., Los Angeles, and Allan R. McDougal, La Crescenta, both of Calif.

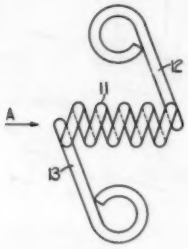
Filed Feb. 24, 1971, Ser. No. 118,269
Int. Cl. F16l 37/18
U.S. Cl. 285—316 **5 Claims**



A squib-actuated disconnect characterized by an expandable collet axially extended from a first tension member for

receiving in locking engagement a protuberance axially extended from a second tension member, and a gas-driven retainer of an annular configuration for releasably supporting the collet in locking engagement with the protuberance and adapted to be displaced in an axial direction in response to a firing of an associated squib for thus accommodating a disengagement of the protuberance and the collet.

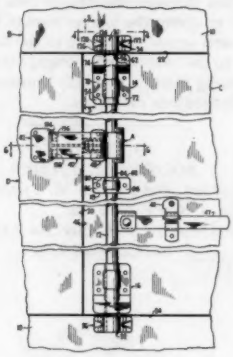
3,737,182
ANCHORAGE DEVICES
John William Sharpe, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 28, 1971, Ser. No. 157,530
Claims priority, application Great Britain, July 23, 1970, 35,696/70
Int. Cl. F16b 7/04
U.S. Cl. 287—86 **1 Claim**



An anchorage device particularly but not exclusively for attaching a window panel to a flexible drive rack is formed from resilient material, for example wire and includes a helically wound portion within which a helically ribbed drive member is received. At opposite ends of the helically wound portion are a pair of outwardly extending limbs which are integral with the helically wound portion and which in use are bolted to the components in question to secure the flexible drive member to the component.

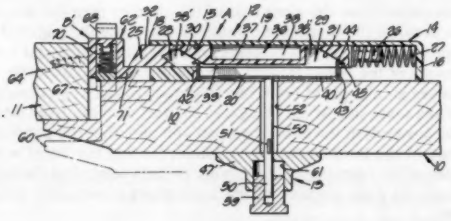
3,737,183
DOOR LOCK
John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 19,867, March 16, 1970, Pat. No. 3,695,661. This application May 20, 1971, Ser. No. 145,279
Int. Cl. E05c 7/04
U.S. Cl. 292—7 **2 Claims**

A cam-type door lock including latch members on opposite ends of an oscillatable rod attachable to a pivoted door adjacent to the non-pivoted side and engageable with keeper members attachable to the door frame adjacent to opposite side edges of the door to secure the door in closed position and a third lock point intermediate the opposite side edges including a strap or latch member secured to the shaft intermediate its ends engageable with a third keeper member on the adjacent door or door frame to pull the two together and towards closed position. The first mentioned latching members overlie the end of the rod or shaft to which they are attached, are symmetrical about the axis of the rod or shaft and each has oppositely projecting forked cam portions adapted to straddle two spaced post portions of the cooperating keeper members. The post portions of the keeper members have tapered side surfaces engageable by the forked cam portions during latching to assure alignment of the door with the frame and to prevent lateral shifting or distorting of the frame in the plane of the door after latching. One post portion of each of the first mentioned keeper members has projecting flange portions with concave surfaces engageable by the forked cam



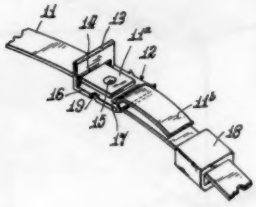
portions of the associated latch member to retain the door in a closed position.

3,737,184
PUSH BUTTON LATCH MECHANISM
Dorian J. Swartz, Yorba Linda, Calif., assignor to Hyer Hardware Mfg. Co., Anaheim, Calif.
Filed June 16, 1971, Ser. No. 153,673
Int. Cl. E05c 1/14
U.S. Cl. 292—170 **17 Claims**



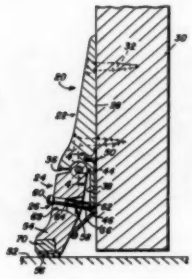
A latch mechanism of the push button type in which a separate associated casing contains a reciprocably mounted bolt normally spring urged to an extended latching position, and to a non-latching position by a pressure plate having its opposite ends engaged with separate cam ramps spaced apart axially of the bolt, the casing having longitudinally extending slotted side flanges permitting adjustable positioning of the casing on one surface of a door. An associated push button assembly is mounted on the opposite surface of the door and includes a mounting bracket either in the form of an escutcheon plate or alternatively a pull knob, a push button being centrally positioned in either case and guided together with a connected push rod having an end operatively bearing against the pressure plate. When a pull knob is used, the bolt is preferably operably associated with a conventional keeper, while in those arrangements where a push button only is utilized, the keeper is provided with a spring urged pusher which engages with the back surface of the closed door, whereby to automatically urge the door to a slightly ajar position, when the bolt is released.

3,737,185
SECURITY SEAL
Sumner C. Reed, 335 Cottage Hill, Elmhurst, Ill.
Filed Oct. 6, 1971, Ser. No. 186,904
Int. Cl. B65d *55/06*
U.S. Cl. 292—308 9 Claims



A security seal embodying a hard core attached to a tape end and having a slot therein to receive the other tape end, wherein the assembly is enclosed in a deformable sleeve.

3,737,186
DOOR STOP
Jimmie A. Chezem, P.O. Box 2232, Sarasota, Fla.
Filed Aug. 19, 1971, Ser. No. 173,310
Int. Cl. E05c *17/12*
U.S. Cl. 292—338 7 Claims

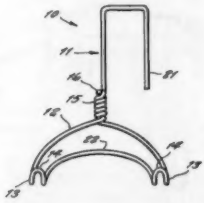


A door mounted stop which includes a pivotally mounted depending leg swingable downward into frictional engagement with the floor as to prevent an inward swinging of a door at any point along the path of movement of the door. A releasable lock is provided for retaining the door stop in the movement retarding position against the biasing force of spring means which, upon a release of the lock, will return the door stop to a retracted position.

3,737,187
ANGULARLY CONTROLLED EXTENSION FOR HOUSE PAINTER'S BRUSH
Harry T. Pryor, 9434 Cedar Avenue, Bloomington, Calif.
Continuation of Ser. No. 889,561, Dec. 31, 1969, abandoned.
This application June 25, 1971, Ser. No. 156,958
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R 4 Claims

A light weight extension rod terminating in an angularly adjustable mount for the handle of a conventional house painter's brush to facilitate high overhead house painting with the brush held optionally at any of a variety of angular attitudes with respect to said rod.

3,737,188
TRIPLE BUCKET HOOK
Paul H. Myers, 231 W. Main, Verona, Ohio
Filed Sept. 14, 1971, Ser. No. 180,410
Int. Cl. B44d *3/14*
U.S. Cl. 294—27 R 1 Claim

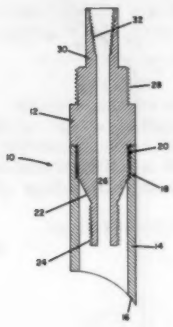


An improved hook for supporting a paint bucket suspended from a ladder or scaffold, the hook having means to prevent the suspended paint bucket from spinning while being used during a painting operation, the device consisting of a stiff wire frame which at its upper end is bent to form a configurated hook member for fitting stationarily to a ladder or scaffold, and the lower end being arched with hook members at each end for fixed attachment of a paint bucket.

3,737,189
REVERSIBLE TIE-BACK TOOL
Embree L. Darby, Lafayette, La., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Dec. 23, 1971, Ser. No. 211,448
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.34 3 Claims

Disclosed herein is a reversible tie-back tool which may be built to run on a reclamation tubing string in order to provide a means to tie back into a tubing string that has been backed off within a liner. The reversible tie-back took insures screw-

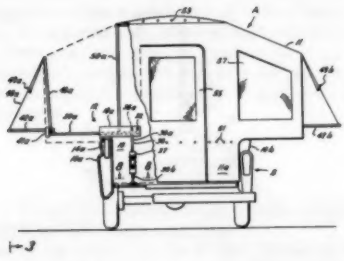
ing back into the fish or lost tubing string without damaging either the exposed box or pin of the plugged tubing string or of the reversible tie-back tool allowing a pressure tightening of the fish and reclamation tubing string from the surface.



3,737,190
CAMPER UNIT

Robert W. Smith, 2041 Carolina Avenue, Port Arthur, Tex.; William H. Smith, 303 Hill Terrace Drive, and Roy E. Neel, 704 22nd Street, both of Nederla, Tex.

Filed June 25, 1971, Ser. No. 156,860
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 A **17 Claims**



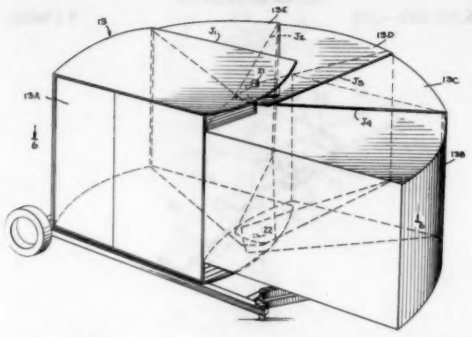
A camper unit is sufficiently light and compact that it may be easily carried on a vehicle such as a pick up truck, and may be erected on the ground or in the pick up truck itself.

3,737,191
EXTENSIBLE CAMPING TRAILER

John S. Fackre, 1936 Linden St., Ridgewood, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,862
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 **6 Claims**

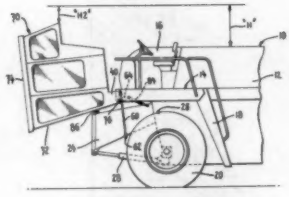
A longitudinally and laterally extensible camping trailer formed by a collapsible body supported on a chassis whose rear end is mounted on a set of wheels, the front end thereof being hitchable to a vehicle. The body includes a box-like main housing affixed to the chassis and a similarly shaped sub-housing of slightly smaller volume receivable within the main housing and pivoted thereto, whereby when the sub-housing is rotated 180° about its pivot, the main and sub-housings together form a longitudinally elongated chamber having an open side. Also pivoted to the main housing are a plurality of housing segments which in the collapsed state internest within the main housing, and in the expanded state define a bay section enclosing theopen side of the chamber and laterally expanding the volume thereof.



3,737,192
HINGED MOUNTING FOR TILT CAB

Walter Hirsch, Don Mills, Ontario, Canada, assignor to Massey-ferguson Industries Limited, Toronto, Ontario, Canada

Filed Oct. 12, 1971, Ser. No. 188,067
Int. Cl. B62d *33/06*
U.S. Cl. 296—28 C **6 Claims**



A tilt cab is mounted at one end of a vehicle for downward tilting movement around a pivot axis and subsequent support on a lift member associated with the vehicle. A load damping and energy storing device is connected between the cab and the frame of the vehicle in such a manner as to be activated by upward movement of the lift member conjointly with the downward swinging of the tilt cab, to first dampen the movement of the tilt cab downwardly while simultaneously being loaded and thereafter exerting a hold-down force on said tilt cab to maintain secure shake-proof support of the cab on the lift member.

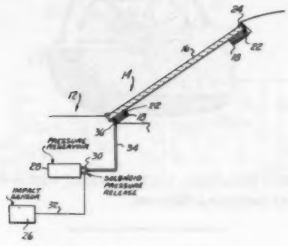
3,737,193
WINDSHIELD EJECTOR FOR VEHICLES

Robert H. Cain, 510 Garner Road, Milford, Mich.

Filed Oct. 22, 1971, Ser. No. 191,684
Int. Cl. B60j *1/02*
U.S. Cl. 296—84 K **2 Claims**

A windshield mounting assembly for vehicles which includes a continuous outwardly opening channel at the windshield opening peripherally supporting and holding a

windshield. A high pressure expansion tube is nested in the channel and connected to a pressure fluid reservoir, con-

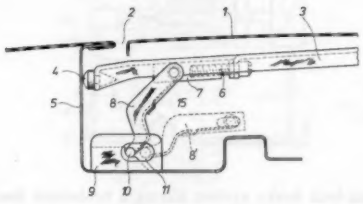


trolled by a preset impact sensor to expand and eject the windshield.

3,737,194
LIFTING AND CLAMPING DEVICE FOR RIGID RIDING ROOFS OF AUTOMOBILES

Alfons Lutz, Krailling, and Georg Kandler, Germering, both of Germany, assignors to Webasto-Werk W. Baier KG, Stockdorf b. Munich, Germany

Filed Jan. 29, 1971, Ser. No. 111,050
Claims priority, application Germany, Mar. 11, 1970, P 20 11 421.0
Int. Cl. B60j 7/10
U.S. Cl. 296—137 E **9 Claims**



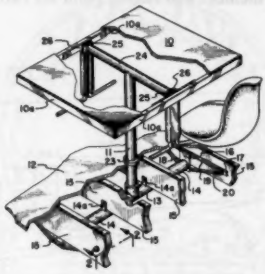
A lifting and clamping device for rigid sliding roofs of vehicles wherein, in a slidable roof panel two brake rods are provided which are movable transversely to the direction of the sliding movement of the panel and where with aid of the two levers the rear end of the panel can be raised and lowered when the panel can in the closed position. The levers are articulated with one end to one of said brake rods, the other end of the levers co-operating with fixed support means for said raising and lowering of the panel. Each lever has a finger extending in the direction of the panel-closing movement, co-operating with a cutout in said support means; and may be fitted with a spring biasing it toward the brake rods.

3,737,195
SEAT SUSPENSION APPARATUS

Herman Wendell Black, 138 North Meridian St., Blackfoot, and Richard R. Wright, 1335 Azalea Drive, Idaho Falls, both of Idaho

Filed Apr. 8, 1971, Ser. No. 132,320
Int. Cl. A47b 39/00, 91/08
U.S. Cl. 297—142 **17 Claims**

A seat suspension apparatus for hanging seats from beneath a table top. A cable serves as a support, pivot structure and adjustable biasing means for the seat supporting arm and a reinforcement bar strengthens the supporting arm so that its size can be kept to a minimum and also serves as an anchor and



guide for the cable. An adjustment bolt can be provided to move the supporting arm up with respect to the cable, and to thereby change the elevation of the seat supported by the arm.

3,737,196
ANIMAL TOY

Mary Elizabeth Bodor, 32135 Bingham Road, Birmingham, Mich.

Filed July 1, 1971, Ser. No. 158,909
Int. Cl. A63g 9/10; A63h 3/02
U.S. Cl. 297—181 **1 Claim**

An animal toy comprising a supporting frame in a form of a stool adapted to support a young child mounted astride the stool, the stool having a body member with legs depending therefrom and a neck member projecting upwardly from one end of the body member, and a removable covering of flexible material for the stool having a simulated animal configuration. The covering includes a filled head portion, a neck portion depending from the head portion and enveloping the neck member, a body portion extending from the neck portion and enveloping the body member of the stool, and a plurality of sleeves depending from the body portion, each receiving one of the legs of the stool. Coverings have different animal configurations can be interchangeably mounted on the same supporting frame.

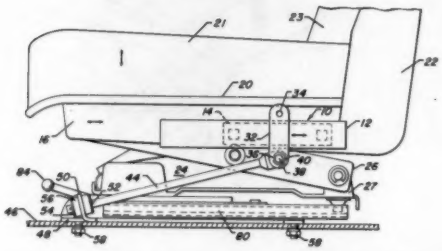
3,737,197
SEAT BELT ANCHOR MECHANISM FOR ADJUSTABLE SEAT

Garth O. Hall, and Donald J. Zach, both of Milwaukee, Wis., assignors to Universal Oil Products Company, Des Plains, Ill.

Filed Dec. 29, 1971, Ser. No. 213,572
Int. Cl. A62b 35/00; B60r 21/00
U.S. Cl. 297—385 **8 Claims**

Seat belt anchor mechanism for vertically movable suspension seat having fore and aft adjustment feature provides an anchor point for a lap belt which is spaced from the floor and

movable relative to the floor. The anchor point is on a guide member carried by a slide on the upper movable seat frame and is movable vertically with the seat suspension but remains stationary when the movable seat frame is adjusted fore and aft. The guide member and anchor point are carried at the end



of a pivot link attached at its forward end to the floor of the vehicle. Thus, a tether belt connecting the guide member to the floor can be kept taut when the suspension is at the upper end of its ride zone, irrespective of the position of the seat in a fore and aft direction.

3,737,198

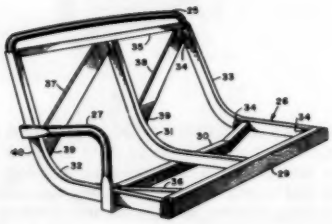
RAPID TRANSIT SEATING

Chester J. Barecki, and Alexander A. Karrip, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed June 28, 1971, Ser. No. 157,345

Int. Cl. B60n *1/00*; **A47c** *7/00*, *7/14*

U.S. Cl. 297—450 **8 Claims**



A cantilever seat frame is provided with parallel wall, aisle and intermediate rails curved at an intermediate area to provide vertically inclined back portions and forwardly extending horizontal seat portions, the wall rail being apertured to receive wall fastening elements, the rails being connected at top and bottom portions by cross members, diagonal braces connecting the rails, and seat and back cushions carried by said seat and back rail portions.

3,737,199

EARTHWORKING TOOL

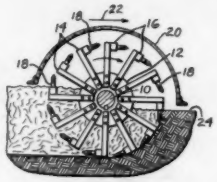
Earle W. Stephenson, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed June 28, 1971, Ser. No. 157,550

Int. Cl. E21c *13/00*

U.S. Cl. 299—89 **1 Claim**

The specification discloses an earthworking tool, in which the tool has a pointed forward end with a hard insert therein, while rearwardly of the pointed end, the tool has laterally ex-



tending inclined shoulders, each provided with a hard wear resistant element mounted thereon.

3,737,200

ANTI-LOCK VEHICLE BRAKE SYSTEMS

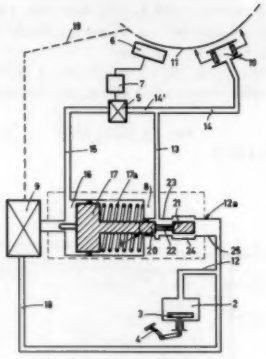
Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,150

Claims priority, application Great Britain, June 26, 1970, 31,132/70

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **4 Claims**



An anti-lock brake system having a brakefeed line which supplies fluid to the brakes. An elongated restrictor element is disposed in the brakefeed line to limit the volume of fluid being supplied to the brakes. The restrictor element is influenced by a piston which is urged into the restrictive position by fuild in a reservoir. The fluid is pumped into the reservoir, and hence acts upon the piston, when an anti-lock valve is actuated. The piston is spring-loaded towards a non-restricting position. The restrictor element has two constrictive sections which cooperate with constrictive wall sections to limit fluid flow.

3,737,201

METHOD AND APPARATUS FOR GENERATING A CONTROL SIGNAL FOR USE IN A VEHICLE BRAKE SYSTEM

Toshiaki Okamoto; Kazutaka Kuwana, both of Kariya, Aichi Pref., and Takefumi Sato, Osaka, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Sharp Corporation, Osaka, Japan

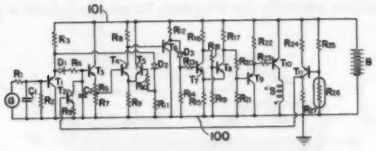
Filed June 24, 1970, Ser. No. 49,480

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 A **13 Claims**

A method and apparatus for generating and using pseudo vehicle speed signals for use with an anti-skid brake control system. A signal responsive to the rotational speed of a vehicle

wheel is generated and used for producing a pseudo vehicle speed signal. A memory is used to store the pseudo vehicle-speed signal and the memory is discharged at a rate dependent upon the applied brake pressure of the brakes of the system.



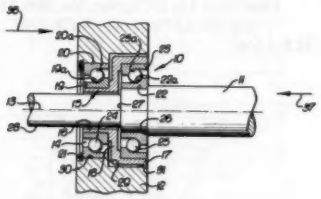
The value stored in the memory is compared with the wheel-rotational speed to control the anti-skid brake control system.

The improvement comprises the provision of a memory and control means adapted for increasing the reduction rate of a memorized vehicle speed voltage with increase of applied brake pressure and conversely for decreasing said voltage reduction rate with decrease of applied brake pressure.

3,737,202
REDUNDANT BEARING

Joseph G. Rosales, Gardena, Calif., assignor to Donald M. Ackley, Hermosa Beach, Calif.

Filed July 19, 1971, Ser. No. 163,811
Int. Cl. F16c *33/00*
U.S. Cl. 308—183 **6 Claims**



A bearing assembly combinable with inner and outer coaxially relatively rotatable members annularly spaced apart comprises:

a. a ring in said space and spaced from said members to be rotatable relative thereto about said axis,

b. first inner and outer annular races respectively on the outer member and the ring and first rolling bearings engaging said first races, and second inner and outer annular races respectively on the inner member and the ring and second rolling bearings engaging said second races, and the races and bearings characterized in that loading is transmitted between said members via said races and bearings and

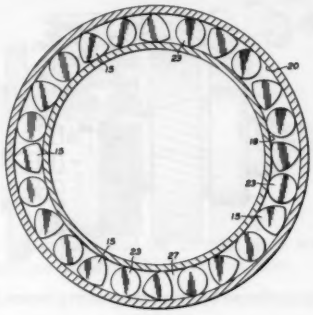
c. there being structure transmitting force acting to pre-load said races and bearings in an axial direction.

3,737,203
BEARINGS

Beverly G. Hawk, 715 W. High St., New Philadelphia, Ohio

Filed May 26, 1971, Ser. No. 147,032
Int. Cl. F16c *33/00*
U.S. Cl. 308—200 **1 Claim**

Bearings are disclosed which are not round and which can replace flat circular bearings, spherical bearings and tapered

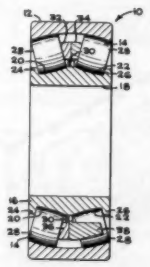


bearings in a race.

3,737,204
EXTENDED LIFE BEARING

Edward A. Burkhardt, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 30, 1971, Ser. No. 203,149
Int. Cl. F16c *33/30*
U.S. Cl. 308—241 **12 Claims**



An extended life roller bearing having an outer race and rollers made of through-hardening steel such as AISI 52100, and an inner race of a carburizing grade of steel that is vacuum remelted, carburized, heated into the austenitizing range and quenched to convert austenite into martensite. The inner race is then subjected to a deep freeze treatment. The inner race is then tempered to produce a one to two point Rockwell Scale C hardness differential from the rollers. After the races are finished, they are subjected to a further stress-relieving process to remove surface stresses during which a black oxide coating is applied to the inner race to protect its roller engaging surface during initial mating and operation of the bearing.

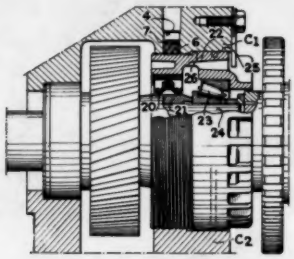
3,737,205
SEALING DEVICE FOR A SCREWTHREADED CONNECTION AND APPLICATIONS THEREOF

Jean Maurice, St-Germain de La Grange, and Andre Mouttet, Bois D'Arcy, both of France, assignors to Automobiles Peugot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed July 1, 1971, Ser. No. 158,864
Claims priority, application France, July 30, 1970, 7028139
Int. Cl. F16c *33/76*
U.S. Cl. 308—207 A **4 Claims**

Sealing device affording a fluidtight seal between an outer member having an inner screwthread and an inner member having an outer screwthread in engagement with the inner

screwthread. The device consists of a plug disposed in a radial aperture in the outer member and compressed directly against

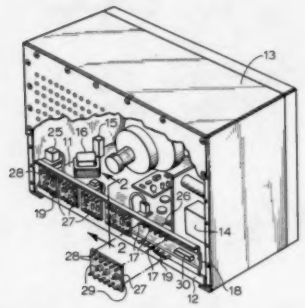


the outer screwthread by plug-compressing means fixed in the aperture.

3,737,206
HINGING MECHANISM FOR A HINGED CHASSIS ARRANGEMENT

Richard L. Pierce, Addison, and Herbert E. Stafford, Oak Park, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,520
Int. Cl. A47b *81/06*
U.S. Cl. 312—7 TV **2 Claims**



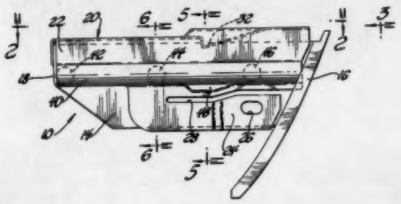
A hinging mechanism for a hinged chassis arrangement which is especially adaptable to automated or semi-automated manufacturing and testing techniques. The hinging mechanism removably couples a sub-chassis to a principal chassis, allowing the sub-chassis to be moved between positions substantially coplanar and substantially perpendicular to the principal chassis. A hinge slot disposed along the fold between the planar surface of the principal chassis and its support flange receives a hinge flange on the sub-chassis to form the hinging mechanism. The principal chassis has inwardly extending preformed tabs on its planar surface and its support flange while the hinge flange has a locking aperture. Whenever one of the tabs engages the locking aperture, the sub-chassis cannot be removed.

3,737,207
ASH TRAY ASSEMBLY

Edwin F. Clemett, Jr., Detroit, Mich., assignor to McCord Corporation, Detroit, Mich.

Filed Nov. 19, 1971, Ser. No. 200,493
Int. Cl. A47b *67/02*; A47f *5/08*
U.S. Cl. 312—246 **15 Claims**

An ash tray assembly of the type suitable for use in automotive vehicles including an integral plastic tray for receiving refuse and a metal support casing supporting the receptacle for movement between open and closed positions. A protrusion extends downwardly from the metal support and into the tray to coact with the rear wall of the tray to provide a stop means which limits opening movement of the tray. Projections extend from the sides of the tray and coact with grooves in the sidewalls of the metal support means for guiding movement of the tray between the open and closed positions. The rearmost projections on each side of the tray are disposed over a discontinuity or enlargement in the grooves when the tray is in the open position whereby the tray may be pivoted about a pair of

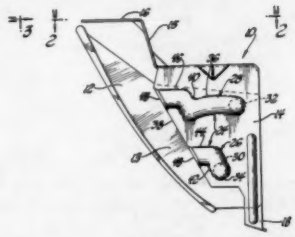


more forward projections to move the rearmost projection downwardly into the enlargement thereby rendering ineffective the stop means by moving the rear wall out of interfering engagement with the downwardly extending protrusion to allow the tray to be removed from the support means. The enlargements in the grooves have slanted walls whereby the protrusions are forced into a wedged engagement with the sidewalls as the sidewalls flex outwardly thereby biasing the rearmost projections upwardly into the path of normal movement along the grooves.

3,737,208
ASH TRAY ASSEMBLY

John H. Haring, Easton, Pa., assignor to McCord Corporation, Detroit, Mich.

Filed Nov. 19, 1971, Ser. No. 200,314
Int. Cl. A47b *67/02*; A47f *5/08*
U.S. Cl. 312—246 **13 Claims**

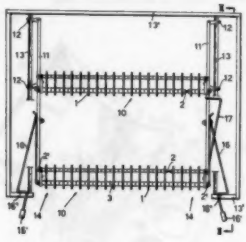


An ash tray assembly of the type utilized in automotive vehicles including an integral one-piece plastic receptacle and a metal support adapted for attachment to the vehicle structure. The receptacle has opposite sides and the support has sides disposed adjacent the sides of the receptacle. A pair of projections extend from the opposite sides of the receptacle and are guided along grooves in the sides of the support. The lower groove on each side has a pocket and the upper groove an arcuate portion struck about the pocket for facilitating rotary movement of the receptacle between open and closed positions. The upper groove on each side has a transversely extending portion extending upwardly from the arcuate portion and the lower groove on each side has a parallel portion extending generally parallel to the transverse portion from the pocket. Additionally, the grooves include removal portions extending parallel to one another and laterally away from the parallel and transverse portions respectively to the extremity or edge of the sides of the support plate for faciliataing removal of the receptacle.

3,737,209
TRAY FOR STORING AND DRYING DISHES AND KITCHEN UTENSILS

Nathan Manor, 69 Zahal Street, Zahalia, Israel

Filed Jan. 20, 1972, Ser. No. 219,487
Int. Cl. A47b *51/00*
U.S. Cl. 312—247 **6 Claims**

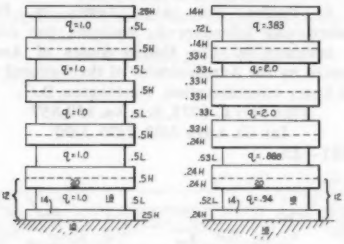


An assembly of superposed trays, for storing and drying dishes, is slidably supported on rails and vertically retractable into and out of an encasement. A means for moving the assembly includes springy manipulator members fixed to the assembly. The manipulator members include a latch element normally engageable with the encasement to retain the assembly within the encasement.

3,737,210
MULTILAYER FILTER BASED ON SUBSTITUTION OF HERPIN EQUIVALENT LAYERS IN A ANTIREFLECTION COATING FORMULA

James D. Howe, Fairport, N.Y., assignor to Bausch Lomb Incorporated, Rochester, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,895
Int. Cl. G02b *5/28*
U.S. Cl. 350—166 **2 Claims**



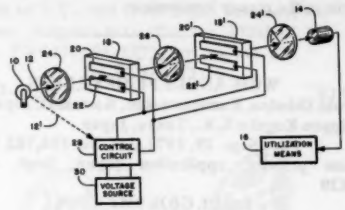
A filter comprises a plurality of thin films of alternating materials arranged in a periodic pattern wherein various symmetrical periods define a stopband and have equivalent indices and thicknesses in the passbands determined by adjusting the ratio q of layer thicknesses within the period, the equivalent indices being chosen to correspond to a known antireflecting coating in the passband, while holding the sum σ of the effective layer thicknesses constant for each period.

3,737,211
FERROELECTRIC-TYPE OPTICAL FILTER

John T. Cutchen; Gene H. Haertling; James O. Harris, Jr., and Carroll B. McCampbell, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 1, 1971, Ser. No. 203,727
Int. Cl. G02f *1/28, 1/36*
U.S. Cl. 350—160 R **4 Claims**

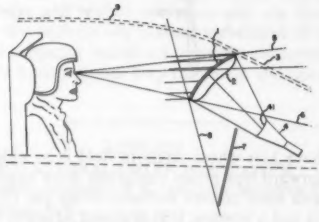
A variable density optical filter or window which includes an electrically variable, optically birefringent ferroelectric-type ceramic plate and means for controlling the birefringence of the plate in response to variations in ambient light to vary the optical transmittance of the ceramic plate with a rapid response time and potentially high contrast ratio.



3,737,212
DIFFRACTION OPTICS HEAD UP DISPLAY

Arvid L. Antonson, Vestal; John E. Bigelow; Charles R. Stein, both of Schenectady, and James W. Van Horn, Vestal, all of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,891
Int. Cl. G02b *27/14*
U.S. Cl. 350—174 **15 Claims**

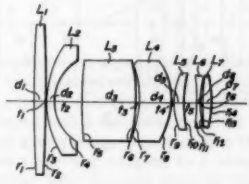


A head up display for combining a direct view as for example that of an aircraft pilot with superimposed light from another source by use of diffraction optics as a combining and collimating element. A specific implementation of an optical combining element and a secondary projector is also disclosed.

3,737,213
WIDE ANGLE CAMERA LENS SYSTEM OF RETROFOCUS TYPE

Nobuo Yamashita, Suwa, Tama City, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 2, 1972, Ser. No. 222,765
Int. Cl. G02b *9/64*
U.S. Cl. 350—214 **5 Claims**



A wide angle camera lens system of retrofocus type comprising a forward lens system having a negative refractive power and consisting of first and second lens elements and a master lens system having positive refractive power and consisting of third and fourth lens elements and a backward lens

system having positive refractive power and consisting fifth, sixth and seventh lens elements and giving negative refractive power to an air lens formed between the third and fourth lens elements in the master lens system.

3,737,214

WIDE ANGLE FISHEYE LENS

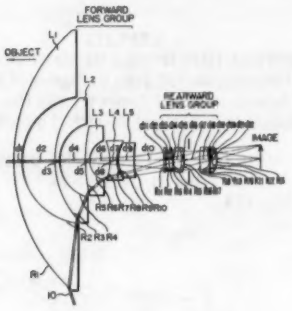
Yoshiyuki Shimizu, Kanagawa-ken, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,782

Claims priority, application Japan, Sept. 30, 1970, 45/85420

Int. Cl. G02b *9/64, 13/06*

U.S. Cl. 350—214 **3 Claims**



A fisheye lens whose angle of field is as wide as 220° and whose forward lens group comprises three negative meniscus lenses with their convex surfaces facing the object, a biconcave lens and a positive lens disposed adjacent the biconcave lens, all these lenses being arranged in the named order in the direction away from the object so as to satisfy predetermined conditions.

3,737,215

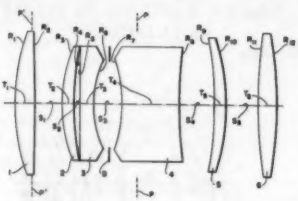
SIX ELEMENT UNIT MAGNIFICATION LENS

Donald De Jager, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,572

Int. Cl. G02b *9/62*

U.S. Cl. 350—215 **4 Claims**



An asymmetrical lens of a modified Gauss type adapted for printing at unit magnification, comprising six air-spaced elements surrounding an aperture stop, with front and rear positive biconvex elements, front and rear positive meniscus elements concave toward the aperture stop and front and rear negative elements.

3,737,216

TRIPLE MIRROR FOR EYE MAKE-UP-CURVED

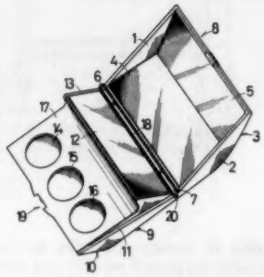
Meigo Noda, 3665 Shinyashida-cho, Kohoku-ku, Yokohama, Japan

Filed Dec. 16, 1971, Ser. No. 208,964

Claims priority, application Japan, Oct. 1, 1971, 46/90744

Int. Cl. G02b *5/08*

U.S. Cl. 350—306 **1 Claim**



A triple mirror for eye make-up wherein a cover, to the inside of the roof of which two plane mirrors are attached inclined to each other, is joined with a triple mirror body having a plane mirror on the surface of its inclined portion and holes on its horizontal portion, in such a way that said cover can be freely folded and unfolded, and which is so constructed that, when said cover is unfolded, said plane mirror of said triple mirror body and said two triple mirrors of said cover form a triple mirror having a specified angle.

3,737,217

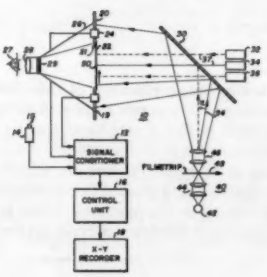
VISUAL EXAMINATION APPARATUS

Richard F. Haines, Palo Alto; James W. Fitzgerald, Atascadero, and Salvadore A. Rositano, San Jose, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 6, 1971, Ser. No. 159,857

Int. Cl. A61b *3/02, 3/06, 5/00*

U.S. Cl. 351—23 **5 Claims**



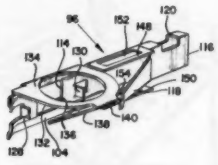
An automated visual examination apparatus for measuring visual sensitivity and mapping blind spot location including a projection system for displaying to a patient a series of visual stimuli, a response switch enabling him to indicate his reaction to the stimuli, and a recording system responsive to both the visual stimuli per se and the patient's responses, the recording system thereby providing a correlated permanent record of both stimuli and response from which a substantive and readily apparent visual evaluation can be made.

3,737,218

MOTION PICTURE FILM PRESSURE PLATE ASSEMBLY

Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 838,822, July 3, 1969, Pat. No. 3,627,407.
This application Mar. 15, 1971, Ser. No. 124,501
Int. Cl. G03b 23/02
U.S. Cl. 352—78 R 13 Claims



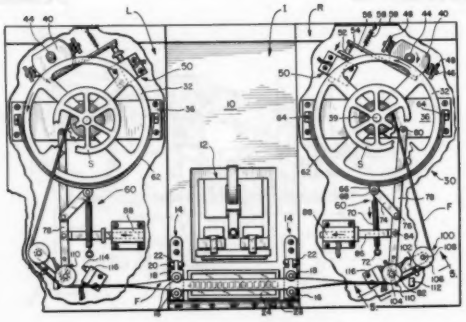
An assembly formed of an integral piece of sheet metal comprising an elongated pressure plate, a leaf-type spring, structure for mounting a light reflecting element in operative relationship to an aperture provided in the pressure plate and structure for reflecting extraneous light rays in a direction away from the light reflecting element. This assembly is particularly well suited for incorporation into a unique low cost motion picture film handling cassette adapted to be first mounted in a camera to facilitate exposure operations and then in a processor-projector unit to facilitate film processing and projection operations.

3,737,219

FILM EDITING DEVICE

Leif G. Jorgensen, 211 South Main St., Lombard, Ill.

Filed May 17, 1971, Ser. No. 143,761
Int. Cl. G03b 21/00, 29/00
U.S. Cl. 352—129 12 Claims



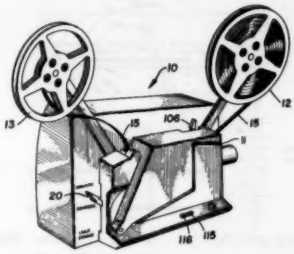
A device for editing motion picture film which includes a film inspection station having means for viewing, cutting, and splicing film; and a pair of film transporting stations having means for winding the film, means for driving the winding means, braking means, and clutch means for controlling the driving and braking means to prevent accidental breaking of film and also to eliminate excess slack between the winding means.

3,737,220

SLOT-LOAD PROJECTOR

Roy E. Hickey, Honeoye Falls; Robert N. McFadden, Fairport, both of N.Y., and Irwin Delin, deceased, late of Fairfield, Conn., assignors to Graflex, Inc., Pittsford, N.Y.

Filed May 24, 1971, Ser. No. 146,225
Int. Cl. G03b 1/56
U.S. Cl. 352—159 62 Claims



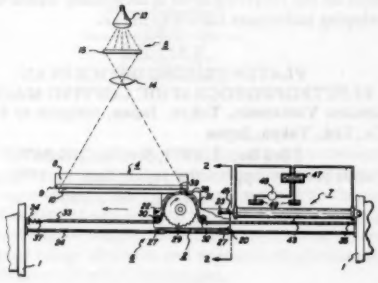
A slot-load projector forms the front loop between the feed sprocket and the gate by means of a mechanical device operated by a main control lever. The projector also provides forward, reverse and rewind operation with the filmstrip in place in the slot without any manual movement of the filmstrip, and the projector includes a complete electro-mechanical system for front and rear loop formation and operation in all modes.

3,737,221

ROTATIONAL DRIVE MECHANISM

Frank A. Roselli, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 820,756, May 1, 1969, abandoned.
This application July 26, 1971, Ser. No. 166,287
Int. Cl. G03g 15/00
U.S. Cl. 355—3 3 Claims

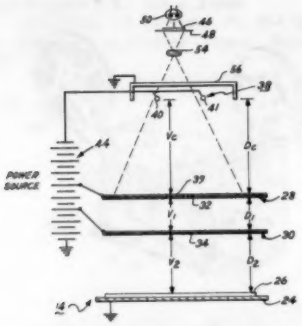


A photoelectrophoretic imaging system is disclosed wherein complementary images are formed from a photosensitive ink placed between a flat transparent conductive plate and a conductive roller coated with a dielectric material. The flat plate is transparent and a light image is projected to the ink through it. The plate and roller are coupled to a voltage source to establish an electric field between them as required by the photoelectrophoretic process; therefore the complementary images are formed as the roller is moved over the surface of the plate. The roller is propelled past the plate by a hydraulic cylinder having its piston rod coupled to the roller and it is made to rotate at an angular velocity directly related to its linear velocity by a link chain anchored at two ends and looped over a mating sprocket coupled to the roller.

3,737,222
COPYING MACHINE

Lloyd A. Briggs, 1420 Sheridan Road, Wilmette, Ill.; Dave R. Kazen, Niles, Ill., and Val R. Viers, Colorado Springs, Colo., assignors to said Briggs, by said Viers

Filed Nov. 19, 1971, Ser. No. 200,360
Int. Cl. G03g 15/00
U.S. Cl. 355—3 12 Claims

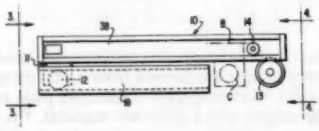


An improved electrostatic copying machine which utilizes a novel, biased double screen arrangement to form latent electrostatic image on a dielectric receiving layer, such as paper or the like, is disclosed. The double screen arrangement includes a first wire mesh screen having a photoconductive coating thereon and a second wire mesh screen having either a photoconductive coating or an insulator coating thereon. These screens are positioned, one above the other, between a conventional corona device and the receiving layer, with the first screen being positioned adjacent to the corona device and the second screen being positioned adjacent to the receiving layer. The first screen is biased with respect to the receiving layer and with respect to the second screen and the second screen is biased with respect to the receiving layer. A latent electrostatic image is formed on the receiving layer by projecting an optical image of the original to be copied onto the first screen while simultaneously raising the corona device to a corona discharge potential. The latent electrostatic image thus formed on the receiving layer is then made visible by suitable developing techniques known to the art.

3,737,223
PLATEN DRIVING DEVICE IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE

Kazunobu Yamamoto, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,067
Claims priority, application Japan, Dec. 14, 1970, 45/123929
Int. Cl. G03b 27/48, 27/50
U.S. Cl. 355—8 1 Claim

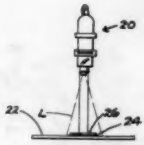


Apparatus for driving a platen in an electrophotographic copying machine including a platen, a drive roller in friction contact with the bottom of the platen, a platen support means, power means for rotating the drive roller to move the platen in a predetermined direction in the horizontal plane, and depressing means for depressing the platen onto the drive roller to thereby prevent vertical movement of the platen during movement of the platen in the predetermined direction.

3,737,224
APPARATUS FOR CALCULATING EXPOSURE TIMES AND SUBTRACTIVE COLOR FILTRATION IN DARK ROOM PHOTOGRAPHY

J. Glenn Culler, Ann Arbor, Mich., assignor to KMS Industries, Inc., Ann Arbor, Mich.

Filed July 30, 1971, Ser. No. 167,766
Int. Cl. G03b 27/32; G06c 3/00
U.S. Cl. 355—32 13 Claims



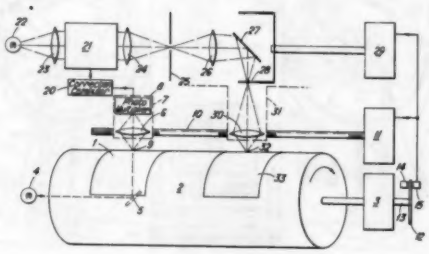
Apparatus for determining proper exposure times and subtractive color filtration in making color prints from color negative films comprises a calculator and a data converter. Color print paper is test exposed to light passing through the negative, a diffusion filter, and red, green, and blue double wedge shaped filters of graduated density in the calculator. When the paper is developed the faintest sharply defined cyan, magenta, and yellow image indicates the correct exposure time for its respective primary color and the correct exposure time for printing is that indicated by said cyan image.

The data converter has three rotatable discs, each with an index for one primary color settable relative to an adjacent exposure duration scale at the test print value. This causes another index on each disc to set at a correlated subtractive color filter density value on another scale. After the discs are moved together to eliminate neutral density, the filter pack combination is read from the subtractive indices.

3,737,225
HALF-TONE IMAGE REPRODUCTION

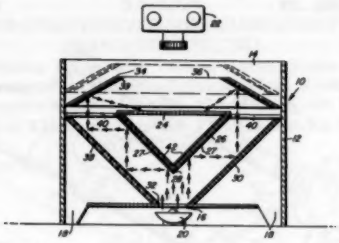
John E. Aughton, London, England, assignor to Crosfield Electronics Limited, London, England

Filed Dec. 27, 1971, Ser. No. 212,434
Int. Cl. G03f 5/02
U.S. Cl. 355—48 5 Claims



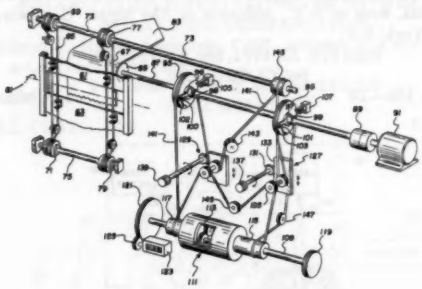
In image reproduction apparatus employing a scanning light spot to expose a light-sensitive sheet, a half-tone image is produced by moving a light-transmitting half-tone screen element through the light path between the light source and the light-sensitive sheet at a point in the light path conjugate with the light spot on the sheet. In this way an image of the moving screen element, which may be a rotating loop of film, is formed at the light-sensitive surface.

3,737,226
LIGHT DIFFUSION ASSEMBLY FOR CLOSE-UP PHOTOGRAPHY
Lawton F. Shank, R. R. No. 2, Howe, Ind.
Filed Oct. 22, 1971, Ser. No. 191,908
Int. Cl. G03b 27/54
U.S. Cl. 355—67 12 Claims



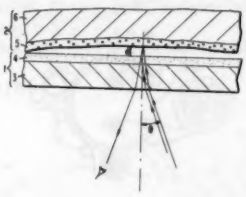
A light diffusion assembly for close-up photography, said assembly comprising a generally cubical housing with a light-receiving opening in one side and a camera lens opening in the opposite side, a plurality of pyramid-like reflectors aligned with each other and with the light-receiving opening to reflect and diffuse the light from the source onto a photographic subject supported within the housing remote from the light-receiving opening in order to eliminate undesirable shadows and reflections.

3,737,227
PRINT BORDER CONTROL APPARATUS
James E. Harter, and Norman J. Rosenburgh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 20, 1971, Ser. No. 181,686
Int. Cl. G03b 27/58
U.S. Cl. 355—74 9 Claims



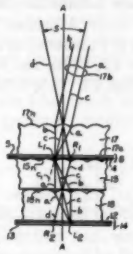
Photographic printing apparatus for making varying size prints with adjustable border settings, the various print sizes corresponding to different magnifications. The apparatus utilizes a two stage print paper advance mechanism continually referenced to horizontal and vertical optical center lines, whereby the sequential exposures of varying size including their respective borders are contiguous. The two stage advance also permits simplified marking of the print paper for subsequent cutting operations.

3,737,228
CONTACT PRINTER FOR PHOTOGRAPHIC MATERIAL
Hitoshi Urabe; Kimitoshi Nagao; Masao Takano, and Shigeru Watanabe, all of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 26, 1972, Ser. No. 247,672
Claims priority, application Japan, Apr. 26, 1971, 46/27353
Int. Cl. G03b 27/02
U.S. Cl. 355—78 5 Claims



A vacuum contact printer for photographic material wherein the degree of contact between an original document and a photosensitive material can be determined even during operation of a vacuum pump by examining an interference fringe of a coherent light.

3,737,229
RELIEF PHOTOGRAPH CONVERSION PRINTING APPARATUS
Harry S. Jones, Monmouth Beach, N.J., assignor to Chrom-Tronics, Inc., New York, N.Y.
Filed June 27, 1967, Ser. No. 649,312
Int. Cl. G03b 27/02
U.S. Cl. 355—78 4 Claims

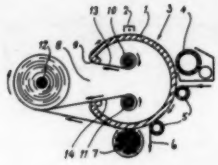


Photographic printing method and apparatus for converting abnormal, reversed or pseudoscopic three-dimensional photographic images to normal images concurrently with the printing thereof in desired size relation through interposition use of multielement lens overlays to effect selective optical inversion of component image elements and exposure of photosensitive film to such inverted relief data images.

3,737,230
WEB TRANSPORT SYSTEMS FOR COPYING MACHINES
Henricus J. M. van Meijel, and Gerardus J. H. van Beek, both of Venlo, Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands
Filed Nov. 30, 1971, Ser. No. 203,334
Claims priority, application Netherlands, Dec. 7, 1970, 7017831
Int. Cl. F03b 27/10; G03g 15/00
U.S. Cl. 355—111 11 Claims

A copying apparatus having a processing zone in which images are formed on a continuous light-sensitive web and then transferred from it to copy material is provided with two such webs which extend and are moved simultaneously

between holding means, e.g., one or two rotary winding spools or other web storage devices, and take-up means such as one or two rotary spools, and with displaceable means which engage leads of said webs so as to guide one of them through the processing zone and thence to the take-up means or the holding means while the other web is being moved directly to the latter and which, upon being displaced to a second working position with reversal of the direction of movement of the webs, will guide the other web through the processing zone and thence to the holding means or the take-up means while

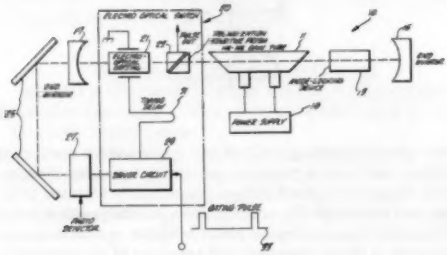


passing the one web directly back to the latter. The displaceable guide means may be constituted by a hollow structure, such as a slotted cylindrical drum or a series of rollers in an angular arrangement, which has a lateral opening for the web leads, is rotatable through an angle of at most 360°, has rotary spool means mounted therewithin, and has the processing zone disposed about its outer periphery. In apparatus having a rectilinear or slightly curved processing zone, the guide means may comprise a set of rollers displaceable between working positions at opposite ends of such zone.

3,737,231
HIGH PULSE RATE HIGH RESOLUTION OPTICAL RADAR SYSTEM

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Willis C. Goss, Altadena; Richard H. Burns, and Ko-Chuan Chi, both of Pasadena, all of Calif.

Filed Nov. 13, 1970, Ser. No. 89,210
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **1 Claim**

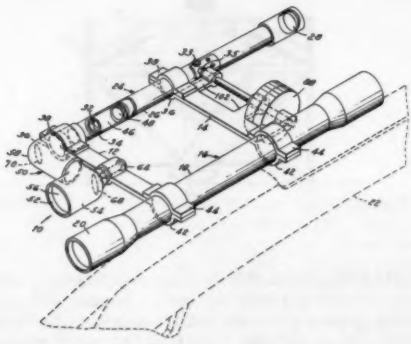


A radar transmitting system is disclosed for transmitting an optical pulse to a target comprising an optical cavity containing a laser incorporating a mode-locking means to build up an optical pulse. An optical switch is also provided within the cavity to convert the polarization of the optical pulse generated within the cavity. The optical switch comprises an electro-optical crystal driven by a time delayed driver circuit which is triggered by a coincident signal made from an optical pulse signal and a gating pulse signal. Upon being energized, the electro-optical crystal functions to convert the polarization of the optical pulse as it passes through the crystal. This converted optical pulse then strikes a polarization sensitive prism and is deflected out of the cavity toward the pending target in the form of a pulse containing most of the optical energy generated by the laser in the pulse build-up period. After striking the target, the reflected energy is picked up by a transceiver with the total travel time of the pulse being recorded. This travel time is a measure of the distance from the transceiver to the target.

3,737,232
FIREARM TELESCOPIC RANGE FINDER

Raymond E. Milburn, Jr., Route No. 1, Box 128, Round Lake, Ill.

Filed Oct. 15, 1970, Ser. No. 80,840
Int. Cl. G01c *3/14*
U.S. Cl. 356—18 **10 Claims**

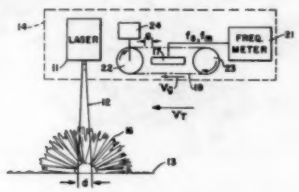


A range finder device with a range telescope mounted parallel to and laterally spaced from a conventional gun sight telescope adapted to be mounted on a rifle. The range telescope has an optical and mechanical mechanism for sweeping its line of sight in a generally horizontal plane so that it crosses the line of sight of the gun telescope. A manually rotatable wheel with graduations thereon drives the mechanism for sweeping the line of sight of the range telescope. The graduations are spaced on the wheel in proportion to the included angle formed by the crossing of the lines of sight to provide an indication of the distance between a target at the point of crossing and the rifle on which the range finder device is mounted.

3,737,233
VECTOR VELOCIMETER

Donald Z. Blau, City Island, and Jesse C. Kaufman, Yorktown Heights, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,349
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **13 Claims**



A velocimeter having: a source of coherent radiation directed to irradiate a surface from which the relative velocity is to be measured; a receiver for the resulting reflection of coherent radiation from said surface, the receiver including a receiving aperture and a photodetector responsive to the reflected radiation passing through the aperture; a drive to translate the aperture, and; circuitry to indicate the frequencies of the signals generated by the photodetector when the aperture is stationary in relation to the photodetector and

when the aperture is translated in relation to said photodetector. The velocimeter determines the magnitude and the direction of the velocity vector it measures. A navigation velocimeter, using the described velocimeter, is disclosed for use in an aircraft to determine the direction and magnitude of the velocity vector of the aircraft with respect to the ground. The aperature hereinabove mentioned is preferably a plurality of slits, alternately transparent and opaque, such as in a transmission type optical diffraction grating.

3,737,234

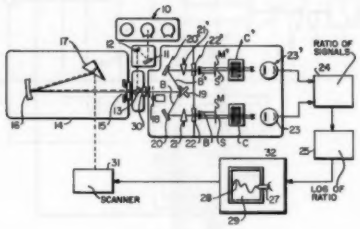
SPECTROPHOTOMETER FOR MEASUREMENT OF DERIVATIVE SPECTRA

Kazuo Shibata, Tokyo, and Takashi Kurita, Kyoto, both of Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 571,458, Aug. 10, 1966, abandoned. This application Dec. 17, 1970, Ser. No. 99,140

Int. Cl. G01j *3/42*

U.S. Cl. 356—88 **5 Claims**



A spectrophotometer for measurement of the derivative spectra of substances, comprising a monochromatic light source having a spectral bandwidth, a beam divider for dividing the light from the light source into two beams, masks separate from and positioned optically downstream from the beam divider for partially masking the beams so that the unmasked portion of each of the beams has a nominal wavelength different by a predetermined value from that of the unmasked portion of the other beam, a sample container so arranged as to receive the unmasked portions of the light beams and a detector to measure the intensities of light beams transmitted through the sample cells.

3,737,235

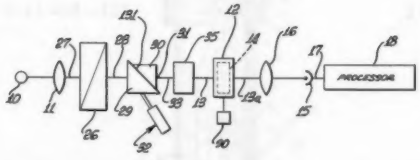
POLARIZATION INTERFEROMETER WITH BEAM POLARIZING COMPENSATOR

Roland C. Hawes, Monrovia, Calif., assignor to Cary Instruments, Monrovia, Calif.

Filed Feb. 10, 1972, Ser. No. 225,238

Int. Cl. G01n *21/40*

U.S. Cl. 356—114 **8 Claims**



Dichroism measurement apparatus includes interferometer means for processing linearly polarized source radiation to provide a beam characterized, for each wavelength, by ellipticity that alternates between left and right circular polarization and between which the beam polarization becomes linear in one direction as the ellipticity alternates from left to right circular polarization, and linear in the orthogonal direction as the ellipticity alternates from right to left circular polarization, the characteristic frequency ν_a of such alternation varying as a function of the wavelength. The interferometer means comprises relatively fixed and movable prisms, both having axes at 45° to the linear polarization direction, and actuating means for effecting such relative movement of said prisms to control the frequencies ν_a.

3,737,236

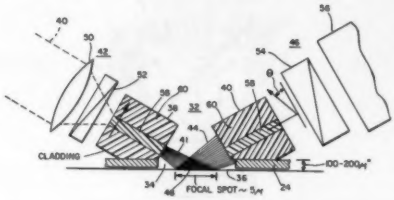
MAGNETOOPTIC READOUT SYSTEM UTILIZING OPTICAL WAVEGUIDE FIBERS

Nicholas F. Borrelli, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,898

Int. Cl. G01n *21/40*

U.S. Cl. 356—118 **10 Claims**



Optical waveguide fibers are utilized in a magnetooptic readout system for magnetic disk file applications to maintain high resolution capabilities of plane polarized light beams. In one type of system, a first waveguide fiber transmits the light beam from a source to a magnetized storage medium and a second waveguide fiber transmits the reflected light beam from the magnetized storage medium to a combination analyzer-detector. The waveguide fibers may be of the self-focusing type with the point of focus being maintained at the magnetized medium. In another type of system, a single waveguide fiber is utilized to transmit the light beam from the source and back to the analyzer-detector. The end of the waveguide fiber adjacent the magnetized medium is coated with a magnetic film having a low coercive field. The light beam is reflected from the film which lies within the flux lines generated by the magnetized medium and undergoes a polarization reversal.

3,737,237

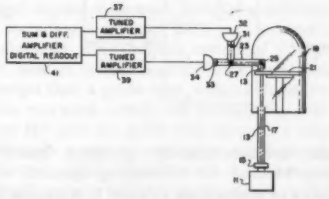
MONITORING DEPOSITION OF FILMS

James L. Zurasky, Hunstville, Ala., assignor to The United States of America as represented by the Secretary of the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 18, 1971, Ser. No. 200,085

Int. Cl. G01b *11/00*

U.S. Cl. 356—161 **3 Claims**



A system using dual wavelength characteristics of light passing through a film being deposited to generate an output signal that changes rapidly at the point when the deposition process should stop or change. Photodetectors are used to sense the light intensity changes at the two wavelengths and the monitored signal represents the ratio of their sums and difference signal strengths.

3,737,238

DEVICES FOR CENTERING SPECTACLE LENSES

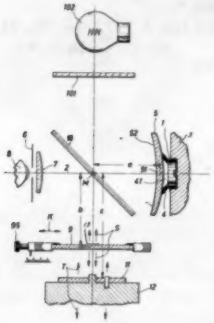
Josef Rudolf Reiner, Rodenkirchen, and Gunther Paul Theodore Schramm, Neuss, both of Germany, assignors to Firma Wernicke & Co., K.G., Dusseldorf-Eller, Germany

Filed Nov. 19, 1971, Ser. No. 200,542

Claims priority, application Germany, Nov. 28, 1970, P 20 58 651.0

Int. Cl. G01b 11/26

U.S. Cl. 356—172 5 Claims



This invention is concerned with devices for centering spectacle lenses, in which the lens is located on a support or mount by means of a rubber cap or the like, so that by copying a template or pattern in a grinding machine the lens is given its desired peripheral shape, the de-centering of the lens vis-a-vis the central rotation point of the template or the mount is transmitted onto a reference plate with a graded scale at the edge and a center cross or other index mark.

3,737,239

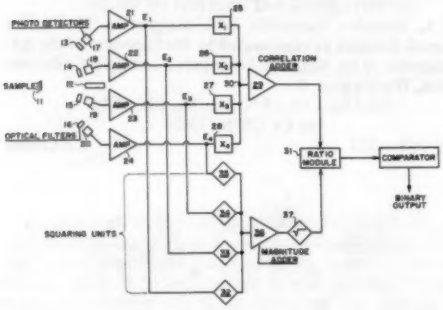
MACHINE COLOR RECOGNITION

Jim Mills Adams, West Caldwell, and William Charles Grimmell, Lake Hiawatha, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed July 16, 1971, Ser. No. 163,306

Int. Cl. G01j 3/46

U.S. Cl. 356—177 16 Claims



Automatic cross-correlation specimen monitoring apparatus and method for identifying spectral reflectance characteristics of a specimen relative to a standard comprising: sensing reflectance values of the specimen at each of two or more overlapping bandwidths covering the spectrum, generating electrical output signals indicative of the reflectance values, modifying the signals with standard reference values one for each of the bandwidths, relating the modified and unmodified signals to generate a cross-correlation coefficient between the specimen reflectance values and the standard reference values, and comparing the cross-correlation coefficient with a preset value representative of a minimum deviation from the standard to quantitatively determine the similarity in spectral reflectance between the specimen and the standard.

3,737,240

EXPOSURE INDICATOR IN A PHOTOGRAPHIC CAMERA

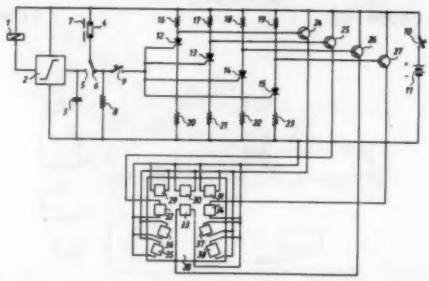
Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 23, 1971, Ser. No. 211,209

Claims priority, application Germany, Dec. 24, 1970, P 20 63 704.1

Int. Cl. G01j 1/42

U.S. Cl. 356—227 12 Claims



A photoelectric element furnishes a signal corresponding to the light available for an exposure. The photoelectric element is connected to a plurality of threshold stages. A plurality of indicator elements which glow when energized are arranged in space and connected to the threshold stages in such a manner that glowing indicator elements form a figure signifying the particular exposure time range.

3,737,241

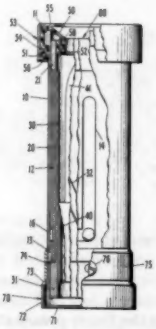
CONTAINER

William J. J. Gordon; Carleton S. Marden, and Charles R. Sperry, all of Cambridge, Mass., assignors to William J. J. Gordon, Cambridge, Mass.; Lawrence E. Fenn, Bridgeport, Conn.; Cavas M. Gobhai and George M. Prince, Cambridge, Mass.

Continuation-in-part of Ser. Nos. 715,103, March 21, 1968, and Ser. No. 555,395, June 6, 1966, and a continuation of Ser. No. 8,290, Feb. 3, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,994

Int. Cl. A45d 40/06

U.S. Cl. 401—59 11 Claims



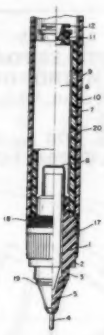
A lipstick container comprising a tubular casing, an elevator positioned and longitudinally movable in the casing, means for

longitudinally moving the elevator in the casing, an iris at one end of the tubular casing comprising an annularly folded, flexible and stretchable, thin-walled tube with the flexible, thin-walled tube secured at one end to the casing. Rotatable retaining means secure the other end of the thin-walled tube within the casing and are adapted on rotation to cause the iris to open and close. Means operatively interengage the means for moving the elevator and the retaining means for sequentially actuating the iris and the longitudinally moving means.

3,737,242
TUBE WRITING PEN

Manfred Hesebeck, Korachstr. 5, 205 Bergendorf, and Holger Suring, Marienhohe 145, 2085 Quickborn, both of Germany

Filed July 15, 1971, Ser. No. 162,900
Claims priority, application Germany, July 17, 1970, P 20 35 526.4
Int. Cl. B43k *5/04, 5/14, 1/10*
U.S. Cl. 401—157 **14 Claims**

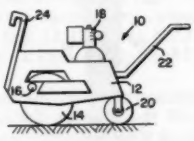


A stylographic or tube writing pen wherein the wall of the ink reservoir consists, at least in part, of a thin and flexible material which is capable of yielding to changes in pressure and serving to adapt the available capacity of the ink reservoir to the volume of ink contained therein. The construction eliminates the necessity of an equalization chamber normally incorporated in such pens, connecting the interior of the reservoir to ambient atmosphere, and the possibility of ink drying therein which leads to pen clogging.

3,737,243
SOIL AND PAVEMENT COMPACTING MACHINE

Seymour Dresher, Morristown, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 177,996
Int. Cl. E01c *19/26*
U.S. Cl. 404—122 **2 Claims**

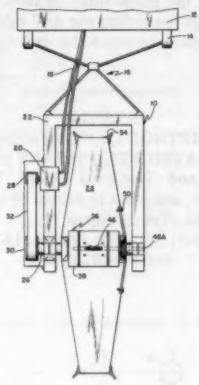


The machine has a frame to which a compacting drum is rotatably mounted and has a pneumatic-tired wheel pivotally journaled to the frame. The wheel is independently powered by a hydraulic motor to provide machine traction, and is steerable by means of an extending handle coupled thereto.

3,737,244
SOIL COMPACTOR

Robert Glen Wilson, 706 Aho-Carson Road, Woodland, Wash.

Filed July 28, 1971, Ser. No. 166,900
Int. Cl. E01c *19/28*
U.S. Cl. 404—117 **7 Claims**

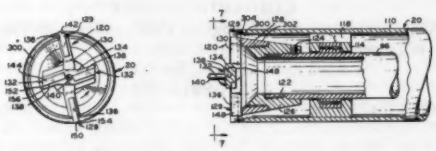


A soil compactor more specifically a soil compacting device to expedite compaction of soil backfill in ditch work. The device consists of a wheel having a concave rim, adapted to be drawn by a towing vehicle in operative positionment in a ditch being backfilled. The compaction wheel is designed to have a vibratory action and includes mechanism for adjusting vibration frequencies and amplitudes to attain maximum density. For adjusting the vibrating action an adjustable eccentric is operatively associated with a revolving center shaft of the wheel.

3,737,245
DRILL BIT FOR POLE BORING MACHINE

Milton H. Mater, 1415 Brook Lane, Corvallis, Oreg.

Division of Ser. No. 843,043, July 18, 1969, Pat. No. 3,598,393, which is a division of Ser. No. 672,064, Oct. 2, 1967, Pat. No. 3,502,124. This application Apr. 8, 1971, Ser. No. 132,538
Int. Cl. B23b *41/02, 51/06*
U.S. Cl. 408—225 **10 Claims**



A pair of aligned drills each includes a drill tube carrying a drill bit including a forward pilot pin, forward cutters of a smaller diameter and rearward cutters of a larger diameter. The drill tube is rotated and drills an axial hole in a pole slightly larger than a guide tube, which extends to a point just behind the rearward cutters and journals the drill tube. Pressurized air fed into the guide tube through a rotary coupling travels through a venturi passage at the forward end of the guide tube and carries chips from the drill bit back through the drill tube. The guide tube is rotated slowly to dislodge chips and facilitate movement of the guide tube into the bore being formed. A carriage slidable on tubular ways and guides slidable on the ways support the guide tube and is moved forwardly slowly by a cable drive to feed the drill and is returned rapidly by the cable drive. The drills are moved forwardly from opposite ends of the pole to be drilled until one drill reaches the end of its feed stroke and then this drill is retracted while the

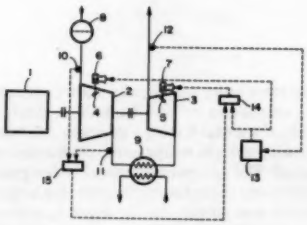
other drill completes its stroke. A slidable interlock prevents the drills from coming together and reverses the motion of the carriage of one of the drills when the drills closely approach each other. Opposed clamps having generally V-shaped jaws on the ends of tongs grip and center the pole relative to the drills. The rotary coupling forms pressure-tight seals both with the drill tube and the guide tube. Spiders in the guide tube mount ball bearings journaling the drill tube and permit flow of air along the space between the drill tube and the guide tube.

3,737,246

CONTROL METHOD OF COMPRESSORS TO BE OPERATED AT CONSTANT SPEED

Takeshi Shirato, and Toshiyuki Ogishi, both of Tamano, Okayama, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed July 30, 1971, Ser. No. 167,672
Int. Cl. F01d *1/00*
U.S. Cl. 415—1 **2 Claims**



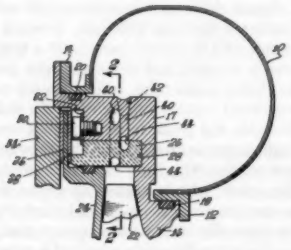
In a compressor system comprising a low pressure compressor, an intermediate cooler and a high pressure compressor, wherein the compressors are operated at a constant speed, and the pressure distribution ratio is controlled to bring it to an optimum value, by employing a variable blade type compressor for said high pressure compressor and varying the setting angle of the stationary blades of said high pressure compressor according to the delivery pressure of its own, and thereby securing a safety operation and a wide operational range when said compressors are used in off-design.

3,737,247

COMPOSITE NOZZLE

William A. Horning, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 12, 1971, Ser. No. 133,002
Int. Cl. F01d *1/08*
U.S. Cl. 415—195 **14 Claims**



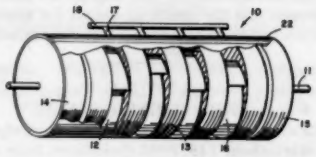
A composite turbine nozzle is provided with an erosion resistant inner surface.

3,737,248

ROTARY ENGINE

Erich E. Abraham, 3400 20th Avenue, S.W., Largo, Fla.

Filed Nov. 15, 1971, Ser. No. 198,739
Int. Cl. F04d *29/40;* **F01d** *1/10*
U.S. Cl. 415—198 **4 Claims**



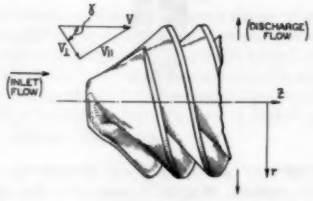
A rotary steam engine apparatus is provided having rotors mounted on a shaft and enclosed in a housing with input and output steam ports for driving the rotors. Each rotor has at least one chamber having a generally arcuate teardrop cross section shape adapted for opening and closing the input and otput ports in a predetermined cycle.

3,737,249

HIGH FLOW PUMP IMPELLER FOR LOW NET POSITIVE SUCTION HEAD AND METHOD OF DESIGNING SAME

Paul Cooper, Cleveland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 26, 1970, Ser. No. 67,131
Int. Cl. F04d *3/02*
U.S. Cl. 416—179 **2 Claims**



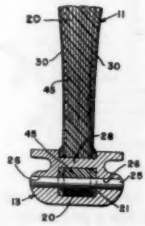
A centrifugal or axial-flow impeller has its blade elements inclined at a predetermined sweep angle γ from the perpendicular to the direction of the approaching fluid being pumped. The sweep angle γ is quite large, being in the inlet region of the impeller typically 45° or more.

3,737,250

FIBER BLADE ATTACHMENT

Walter Pilpel, West Hartford; Spencer P. Torell, New Britain, and Charles E. Spaeth, Manchester, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1971, Ser. No. 153,720
Int. Cl. F01d *5/30*
U.S. Cl. 416—219 **4 Claims**



A fiber composite compressor blade having spanwise fiber elements cast within an appropriate composite material

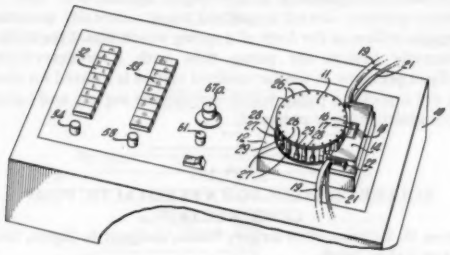
wherein at the root end of the blade the fiber elements are looped over transverse pins extending across a hollow root fitting. The root fitting is generally formed to dovetail into peripheral slots extending across a compressor disc. The exterior of each blade is enclosed by layers of crossply fiber cloth and the cavity within the root fitting is filled with an appropriate potting compound to respectively provide strength and rigidity to the blade.

3,737,251

PERISTALTIC PUMP

Richard M. Berman, Dresher, Pa.; Bernard Schwartz, Springfield, and Lyman W. Bethke, Trenton, both of N.J., assignors to Alphamedics Mfg. Corp., Levittown, Pa.

Filed Feb. 8, 1971, Ser. No. 113,388
Int. Cl. F04b *49/00*
U.S. Cl. 417—12 **11 Claims**



A peristaltic or roller pump is disclosed in which a pair of compressible tubes of unequal inside diameter are held between pumping shoes and a rotor. The rotor has a plurality of pins equally spaced along the periphery thereof. Each of the pins carries one roller thereon for occluding the larger tube. Alternate pins carrying a second roller for occluding the smaller tube.

A stepping motor is employed to drive the rotor in angular increments so that a precision volume can be dispensed. The stepping motor is driven by pulses which initially have a greater interval therebetween than would occur during the normal operation thereof. In this way, the rotor can be driven with a small torque stepping motor.

The ends of the tubes are rigidly held adjacent to the associated pumping shoes so that the pump will operate symmetrically with the rotor being driven in either a pick up or delivery mode.

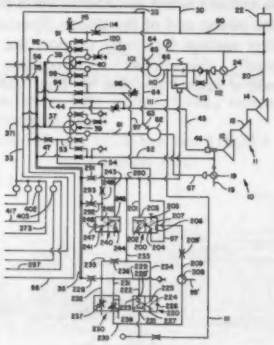
3,737,252

METHOD OF AND APPARATUS FOR CONTROLLING THE OPERATION OF GAS COMPRESSION APPARATUS

Karol Pilarczyk, Loudonville, and Hans Pennink, Scotia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 23, 1971, Ser. No. 117,895
Int. Cl. F04b *49/02*; **F04d** *27/00*
U.S. Cl. 417—53 **6 Claims**

A control system for regulating operation of gas compression apparatus operable on base mode. The discharge pressure of the gas from the compression plant is sensed and a signal related thereto is compared to a predetermined signal to produce a resultant control signal, operable to modulate a dump valve which governs the venting of excess discharge gas to the atmosphere. When the magnitude of the resultant control signal reaches a predetermined value, a second control signal is transmitted to cause the dump valve to assume a fully open position. The second control signal also causes a valve regulating flow of gas to the inlet of the compressor to assume



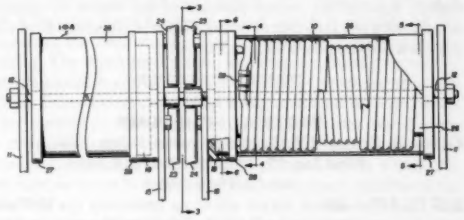
a fully closed position. The compressor is thereby in an idle state.

3,737,253

INERTIA PUMP FOR LIQUIDS

James B. Foote, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 4, 1971, Ser. No. 112,572
Int. Cl. F04f *7/00*
U.S. Cl. 417—241 **2 Claims**



An inertia pump including an accelerator-tube, forming a helical fluid path, which is either a metal coil or a glass-ceramic material, mounted for rotation about the long axis of the coil, means for reciprocating the coil about the axis, a piping system for supplying fluid to the coil, and for discharging fluid from the coil. A valve assembly inserted into the piping system includes a pair of inlet and outlet check valves for converting a reciprocating flow into a unidirectional flow. A fluid is entrapped within the helical coil which, due to its inertia, generates a pressure when the accelerator-tube is oscillated. This alternating pressure is converted to one direction flow and is utilized to pump fluid through the piping system external to the accelerator-tube. The preferred device has a double set of accelerator-tubes on a common shaft.

The denser the entrapped fluid, the iigher the pump pressure.

The accelerator-tube is made from a glass ceramic in one embodiment.

3,737,254

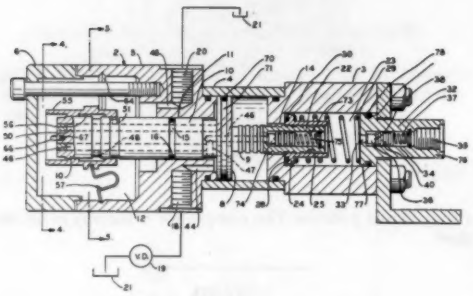
REGENERATIVE RAPID STROKE RECIPROCATING HYDRAULIC PRESSURE CONVERTER

Eugene E. Swatty, Euclid, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Filed Feb. 22, 1972, Ser. No. 227,780
Int. Cl. F04b *17/00, 35/00*; **F01l** *31/02*
U.S. Cl. 417—403 **11 Claims**

A hydraulic converter in which a differential piston is reciprocable in a cylinder by pressure fluid admitted continu-

ously thereinto through a cylinder inlet at one side of the piston. Valve and duct means, including a valve sleeve, connect the cylinder at the other side of the piston alternately to said inlet side and to a sump, depending upon the reciprocated position of the piston and of the sleeve. Specialized snap acting over-center springs floatingly support the valving sleeve for substantially frictionless reciprocation in opposite directions past a center position to final valving positions,



respectively, and are operable to drive the sleeve with a snap action, in the direction toward the final valving position to which the sleeve was being driven by the piston as the sleeve passed over center position. A lost motion connection between the piston and the sleeve drives the sleeve to and slightly beyond the center position of the sleeve in opposite directions upon movement of the piston in opposite directions past determined positions, respectively.

3,737,255

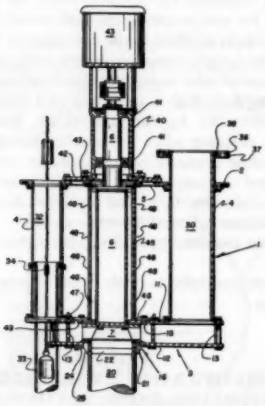
VERTICAL SUMP PUMP

George B. Emeny, 575 Highland Avenue, Salem, Ohio

Filed Jan. 17, 1972, Ser. No. 218,348

Int. Cl. F04b *17/00*

U.S. Cl. 417—424 **10 Claims**



Vertical sump pump for deep pits having a pumping chamber and impeller positioned below the desired upper liquid level and an extension conduit extending down from the pumping chamber and terminating below the lower liquid level.

3,737,256

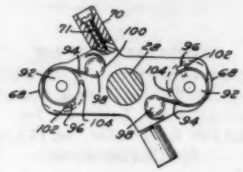
PERISTALTIC PUMP CONSTRUCTION

James H. De Vries, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed July 16, 1971, Ser. No. 163,240

Int. Cl. F04b *43/12*

U.S. Cl. 417—477 **7 Claims**



A peristaltic pump assembly which utilizes a housing with a circular inner wall to back up a peristaltic tube, and a rotor for progressively squeezing a tube right against that wall. A unique pressure device is utilized on eccentrically mounted pressure rollers in the form of a spring which biases the rollers outwardly against the pump tube with a predetermined resilient pressure. A similar resilient system is utilized for closing the top of the pump which entraps the ingress and egress tubes under resilient pressure.

3,737,257

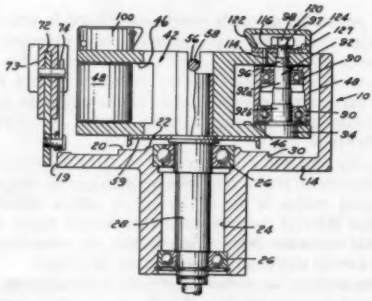
ROLLER CONTROL FOR A PERISTALTIC PUMP CONSTRUCTION

James H. DeVries, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Dec. 2, 1971, Ser. No. 204,123

Int. Cl. F04b *43/08, 43/12, 45/06*

U.S. Cl. 417—477 **7 Claims**



A peristaltic pump assembly utilizing a housing with a circular inner wall and a rotor having outer rollers for progressively squeezing a tube lying against the wall with a provision for radial adjustment of the rollers including an eccentrically mounted bearing shaft and a two-part lock cap on the shaft having a portion to lock the cap movable to an unlock position wherein it can control the rotative position of the lock cap.

3,737,258

FUEL INJECTION PUMP WITH TIMING PORT

Ziedonis I. Krauja, East Peoria, and Kenton C. Opperman, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

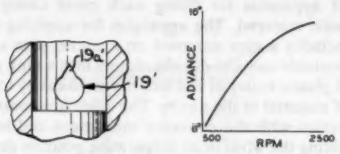
Filed June 7, 1971, Ser. No. 150,645

Int. Cl. F04b *39/10*

U.S. Cl. 417—499 **4 Claims**

A fuel injection pump for an internal combustion engine having an inlet port shaped to effectively advance the pump timing with increased engine speed. The shape of the inlet port

is designed to meter escape of fuel from the pump whereby early injection pressure caused by rapid operation of the pump

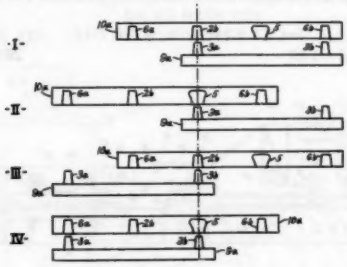


at high speeds is controlled to give the desired timing advance curve.

3,737,259
APPARATUS FOR MAKING COMPOSITE PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Avenue, Riverdale, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,289
Int. Cl. B29d *29/03*
U.S. Cl. 425—112 **12 Claims**

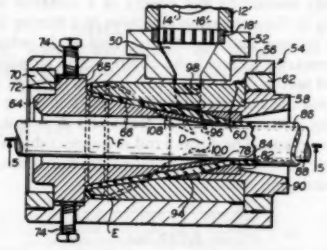


Apparatus for making pressure molded composite parisons and blown articles therefrom wherein preformed sleeves are placed mechanically over the blow cores used for molding the parisons.

3,737,260
COUNTER FLOW GENKA HEAD

David Arnold Kaye, 10932-104th Avenue N., Largo, Fla.

Filed Nov. 12, 1970, Ser. No. 88,632
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **10 Claims**

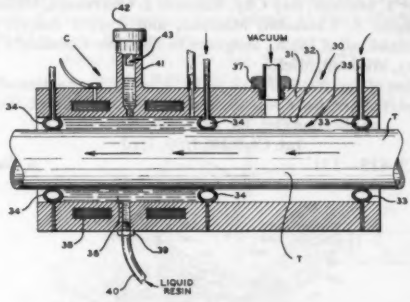


This extruder for extruding plastic coverings over cores, or for extruding a mass of plastic having an annular cross-section and hollow interior, has passages to the extruder die correlated so that the plastic material around the entire circumference of the core travels for substantially the same length of flow path in reaching the outlet of the die. This avoids difference in pressure at different locations around the core and produces a uniform thickness of the extruded covering. The uniform length of flow passage leading to all parts of the core circumference is obtained by a combination of branch and different direction flow passages between the delivery from the extruder screw and the annular outlet of the die.

3,737,261
RESIN IMPREGNATING SYSTEM

Ethridge E. Hardesty, Pine Valley, Calif., assignor to Goldsworthy Engineering, Inc.

Filed Feb. 16, 1971, Ser. No. 115,514
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **11 Claims**

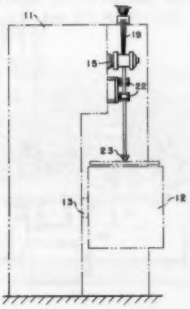


A resin impregnating system in the form of an open-ended tubular housing or canister is provided with a pair of flexible rubber seals at the transverse open ends to accommodate the reinforcing material forming part of a reinforced plastic member passing through the housing. The housing is provided with a suitable resin matrix material which is capable of impregnating the reinforced plastic member passing through the housing. The reinforced plastic member is typically formed of a textile strand material which is capable of receiving the resin matrix. Transducers capable of being operated by sonic energy are located in the housing for forcing the resin into the textile strand material. Another embodiment of the invention discloses a canister divided into two compartments where the first compartment is maintained under vacuum conditions for removing any entrained air in the textile strand material. The member passes immediately from the first compartment into the second compartment which is maintained under pressure for forcing the resin matrix into the voids left by the removed air in the textile strand material.

3,737,262
EXTRUSION APPARATUS

Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 12, 1971, Ser. No. 133,218
Int. Cl. B29c *27/30*; B29f *1/10*
U.S. Cl. 425—113 **5 Claims**



Apparatus for extruding a unitary strip with a plurality of spaced cords including an extruder screw, a die operatively as-

sociated with the screw, the die including cord guiding means, strip sizing means comprising movable members, means for adjusting the position of the members with respect to each other to change the dimensions of the opening through the strip sizing means, and the cord guiding means and the strip sizing means defining a cavity for the flow of plastic material around spaced cords advancing through the die to deliver therefrom a unitary strip.

3,737,263

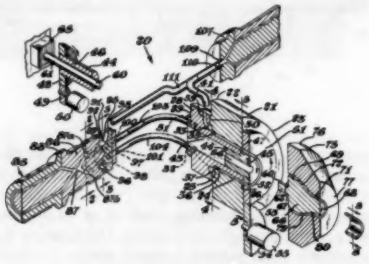
APPARATUS FOR THE FORMATION OF COMPOSITE PLASTIC BODIES

Walter J. Schrenk, Bay City; Kenneth J. Cleereman, Midland; Douglas S. Chisholm, Midland, and Turner Alfrey, Jr., Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 987, Jan. 6, 1970, which is a continuation-in-part of Ser. No. 636,480, May 5, 1967, abandoned. This application Oct. 18, 1971, Ser. No. 190,084

Int. Cl. B29f *3/00, 3/12*

U.S. Cl. 425—131 **6 Claims**



Apparatus is described for making articles of plastic materials; for example, plastic bottles, from a composite of synthetic thermoplastics. Two or more such resinous materials, which have distinct polymeric and physical characteristics, are combined in a way such that they are present in the article in separate phases and in a manner adapted to take full advantage of the resulting combination of properties.

3,737,264

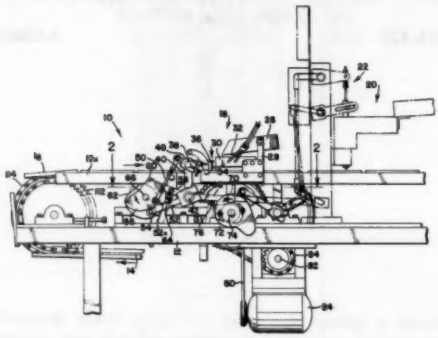
APPARATUS FOR MAKING AND MARKING ELONGATED PLASTIC ARTICLES

Norman H. Nye, Cuyahoga Falls, and Arthur T. Medkeff, Akron, both of Ohio, assignors to Nicholas Creme and Cosma Creme, Tyler, Tex.

Filed June 7, 1971, Ser. No. 150,350

Int. Cl. B29f *3/12*

U.S. Cl. 425—134 **12 Claims**



A machine for molding elongated plastic articles with contrasting markings along the length of the article. The machine includes an endless conveyor carrying a series of open topped molds having elongated mold cavities, apparatus for applying dots of a first plastic material at spaced intervals in each mold cavity, and apparatus for filling each mold cavity with a second plastic material. The apparatus for applying the first material includes a wire mounted on a rocker arm and controlled by suitable cams to dip alternately into a tank containing the first plastic material and into the mold cavity to deposit the drop of material in the cavity. The cams are controlled in synchronization with the conveyor movement and include a cam for holding the wires in an inoperative position during the interval after one mold cavity has moved past the wires and before the next mold cavity reaches the wires.

3,737,265

APPARATUS FOR CONTINUOUS FORMING OF GYPSUM BODIES, IN PARTICULAR PLATES

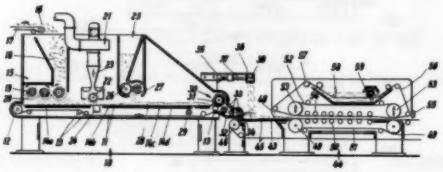
Karl Schafer, Karlsruhe-Durlach, and Artur Hohne, Karlsruhe/Baden, both of Germany, assignors to Ferma Entwicklungswerk fur rationelle Fertigbaumethoden und Maschinenanlagen GmbH & Co. K.G., Ettlingen/Baden, Germany

Filed Jan. 28, 1972, Ser. No. 221,606

Claims priority, application Germany, Jan. 28, 1971, P 21 03 931.6

Int. Cl. B29c *3/06;* **B29d** *7/14*

U.S. Cl. 425—140 **20 Claims**



An arrangement for the continuous production of form bodies, in particular of plates of gypsum and additional material, as well as voluminous feltering fibers by applying of the dry material onto an endless moving form face and moistening of the material with a quantity of water only slightly above the quantity necessary for setting which comprises at least two storage silos storing and discharging dry material. A conveying device having discharge openings as well as mixing-, moisture-, pressing- and drying stations. The conveying device includes at least one preliminary form band consisting of a dense member and passing on a horizontal and straight extending plane said material discharge station. The preliminary form band is connected with at least one device continuously measuring the weight of a material strand and terminating in the conveying direction in a mixing device of a combined mixing and moistening station, in which station being connectable a form band comprises an air passing sieve-like formed textile. The form band extends through all the stations forming the material strand to form bodies up to at least a separating station disposed in front of a drying station on a straight-line plane. The form band is connectable with a conveyor defice having passing individual frames running upright through the drying station.

3,737,266

MOLD FOR PREPARING A SHAPED ARTICLE MADE OF FOAMED THERMOPLASTIC RESIN

Ken Yamamoto, Sashima-gun, Ibaragi-ken, Japan, assignor to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara-shi, Japan

Filed Jan. 11, 1971, Ser. No. 105,278

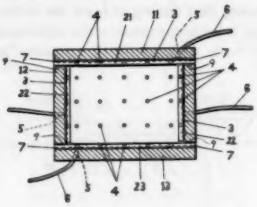
Claims priority, application Japan, Jan. 21, 1970, 45/5850

Int. Cl. B29c *1/14*

U.S. Cl. 425—141 **8 Claims**

A novel non-metallic double-walled mold for the molding of foamable thermoplastic resin by dielectric heating is provided.

The mold is constructed by a special method to provide a thin uniform inner wall spaced apart from the outer wall, but supported by the outer wall to prevent deformation by the force



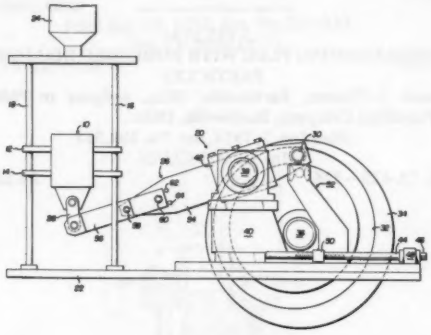
exerted by the foamable resin during expansion. Using the mold, smooth-surfaced foamed articles which conform to the contours of the mold are produced.

3,737,267

SAFETY DEVICE FOR BLOW MOLDING MACHINE

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 7, 1972, Ser. No. 216,214
Int. Cl. B29h *5/24*
U.S. Cl. 425—154 **5 Claims**



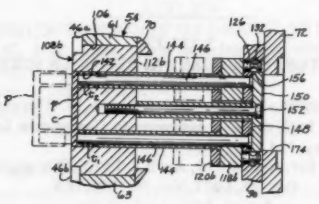
In the event of an obstruction which prevents the full stroke of a mechanically driven reciprocating mold in a blow molding machine, a pair of shear pins in the drive arm fail in a controlled sequence to completely disconnect the drive mechanism from the molds, thereby preventing damage to more costly elements.

3,737,268

MOLDING APPARATUS

Francis E. Ryder, Barrington, Ill., assignor to Value Engineered Components, Inc., Streamwood, Ill.

Filed June 9, 1971, Ser. No. 151,237
Int. Cl. B29f *1/14*
U.S. Cl. 425—192 **13 Claims**



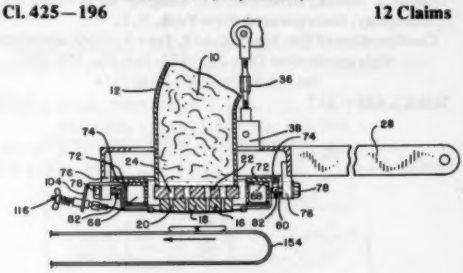
Molding apparatus comprises companion mold members with mold cavity insert assemblies removably mounted thereon. The insert assemblies comprise blocks which form the mold cavity portions and which are separated by divider bars, the latter having transverse runners communicating the mold sprue with the cavity portions of the block. The insert assemblies on one of the mold members have ejector mechanisms which can be readily coupled to the ejector drive of the apparatus. The ejector drive may also include an ejector pin that ejects the molded runner portion in the divider bar. The ejector mechanism for the inserts may be tubular or solid pins, or rotatable members for unscrewing threaded molded parts from the mold.

3,737,269

CUTTING APPARATUS FOR EXTRUDED MATERIAL

Francis J. Grady, Reading, Pa., assignor to Unex Machine & Tool Co., Inc., Reading, Pa.

Filed Aug. 23, 1971, Ser. No. 173,972
Int. Cl. B29c *17/16;* **B29f** *3/04*
U.S. Cl. 425—196 **12 Claims**



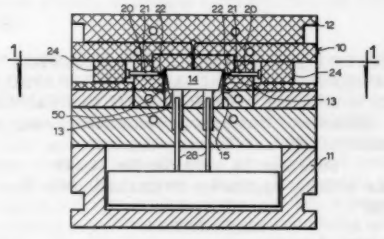
A machine for extruding an extrudable material, such as a food product dough, through a plurality of dies having die openings of a desired configuration and for slicing off the extruded material by means of a plurality of reciprocatory cutting blades, one for each die, the blades being adapted to move across and in contact with the lower faces of the dies in a cutting stroke. To ensure severing of the extruded material at high speeds and without distortion of the configuration thereof, the lower face of each die is convex in a transverse direction, the blade consists of a thin, flexible strip having a sharp cutting edge, and the blade is mounted in such a manner that it is held under tension, the mounting means including means for adjusting the position of the blade relative to the lower face of its associated due to maintain it in contact with such die face during the cutting stroke. A typical field of use of the machine is in the production of pretzels from pretzel dough.

3,737,270

CLUSTERED MOLDS FOR INJECTION MOLDING TWO OR MORE PARTS IN PIVOTAL ASSEMBLED CONDITION IN A FRAME

Theodore E. Fiddler, 1268 Suffield Drive, Birmingham, Mich.

Filed Sept. 27, 1971, Ser. No. 183,757
Int. Cl. B29f *1/00*
U.S. Cl. 425—242 **7 Claims**



A mold having compound clustered cavities within and outside one another for injection molding a plurality of parts at

the same time in assembled rotational relationship wherein an outer cavity forms a first part and an inner cavity forms a second part. Channels lead between the cavities. Retractable plugs lie in the channels and across the outer cavity so that the first part is molded around the plugs which form bearing apertures. Each plug has an internal bore communicating with the inner cavity. When the second part is molded, the bore in the plug molds shafts on the second part with the shafts lying in the apertures of the first part as each plug molds both the shaft and the bearing aperture. This directly rotationally mounts the first and second parts in assembled condition due to the clustered cavities.

3,737,271

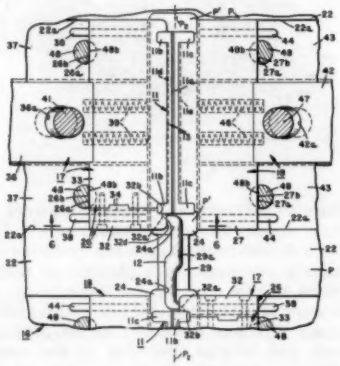
MOLDING APPARATUS HAVING A TUNNEL GATED MOVABLE MOLD MEMBER

George J. Novak, Riverside, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 830,617, June 5, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,295

Int. Cl. B29c 7/00; B29f 1/14

U.S. Cl. 425—247 **3 Claims**



In apparatus particularly suited for molding an article of relatively small thickness, a tunnel gate in a movable mold member extends parallel to a parting line of the apparatus so as to define a relatively sharp gate material shearing edge. When the mold member is in a closed molding position the tunnel gate opens into a mold cavity substantially at the parting line of the apparatus and is aligned with a runner channel so that molding material can be introduced into the mold cavity. As the molding apparatus is opened after the molding of an article, the mold member is automatically moved out of engagement with the article in a direction substantially parallel to the parting line of the apparatus, such that the shearing edge severs gate material in the tunnel gate from the article and such that the gate material is withdrawn from the tunnel gate as an integral part of molding material formed in the runner channel.

3,737,272

IMPROVED INJECTION MOLD APPARATUS FOR THE PRODUCTION OF SUBSTANTIALLY CUP-SHAPED AND SLEEVE-SHAPED THERMOPLASTIC CONTAINERS

Bruno Segmuller, Burgacker, Switzerland, assignor to Segmuller AG, Stein am Rhine, Switzerland

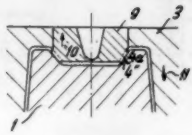
Filed Sept. 18, 1970, Ser. No. 74,249

Claims priority, application Switzerland, July 15, 1966, 10320/66

Int. Cl. B29f 1/06

U.S. Cl. 425—248 **6 Claims**

A method for the production of substantially cup-shaped or sleeve-shaped containers from thermoplastic material by injection molding with at least one mold unit incorporating a male mold portion and a female mold portion, comprising the steps of providing at least one movable locking element at the mold unit for locking both of said mold portions when the mold unit is closed, and positively controlling such locking element in a manner that during at least the initial phase of the highest occurring injection pressure the aforesaid locking element interlocks both of said mold portions and in a sub-



sequent phase unlocks said mold portions. The invention also contemplates an improved injection mold unit or assembly which comprises a female mold portion and a cooperating male mold portion. Locking means are provided for locking both of said mold portions when the mold assembly is closed, such locking means and at least one of the said mold portions being relatively movable.

3,737,273

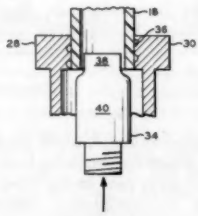
NECK FORMING PLUG WITH EMBEDDED DIAMOND PARTICLES

Robert J. Conner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 7, 1971, Ser. No. 104,562

Int. Cl. B29d 23/03

U.S. Cl. 425—326 **8 Claims**



In the forming of a hollow object from a temperature conditioned thermoplastic parison, the parison is clamped at one end by a neck forming means, and a plug with diamond particles embedded in the surface thereof is inserted into this end of the parison to force the thermoplastic to conform to the shape of the neck forming means.

3,737,274

APPARATUS FOR FINISHING RESINOUS SURFACE COVERINGS

Robert E. Coffin, Wayne, and Anthony N. Piacente, Lawrenceville, both of N.J., assignors to Congoleum Industries Inc., Kearny, N.J.

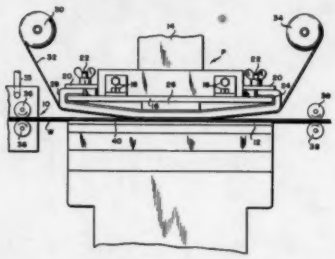
Division of Ser. No. 24,519, April 1, 1970. This application Oct. 29, 1971, Ser. No. 193,704

Int. Cl. B29c 3/04, 15/00

U.S. Cl. 425—364 **14 Claims**

A method and apparatus for finishing resinous sheet material wherein the sheet material is passed through a pressure nip having an upper hard, very smooth, resiliently backed finish-

ing surface and a lower support surface, the outer surface of the sheet material being maintained between about 100° F and



300° F while moving through the nip, and cooling the sheet material after it has passed through the nip.

3,737,275

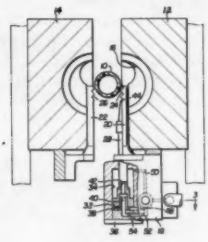
BLOW NEEDLE AND VALVE

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 17, 1972, Ser. No. 218,437

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B **7 Claims**



One mold half of a blow molding machine carries a slidably mounted hollow blow needle which is driven by air pressure to penetrate the extruded plastic tube after the molds have closed, following which blowing air is supplied through the needle bore to inflate the tube to the shape of the mold cavity. After blowing, the blowing air is exhausted from the blown shape and the blow needle is withdrawn. The valve which controls the supply of needle-positioning and tube blowing pressure is also carried by the mold half, to minimize the time lag and pressure drop.

3,737,276

MOLDING OF POWDERED OR GRANULAR MATERIAL

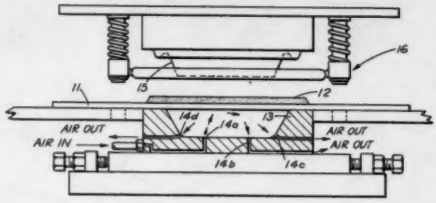
Vincent G. Hill, Hope, Kingston, Jamaica, and William R. Harding, State College, Pa., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 28,845, April 15, 1970. This application Sept. 17, 1971, Ser. No. 181,569

Int. Cl. B29c *3/04*

U.S. Cl. 425—388 **5 Claims**

Shaped articles (e.g., ceramic dishes) are molded from a moldable raw mix with a press which utilizes a separable rubber sheet within the female die. The rubber sheet (1) supports the mix to be molded; (2) distributes pressure uniformly during molding; and (3) releases the molded part from the female die after molding. The rubber sheet advantageously forms part of a conveyor belt. The use of a female die which is



itself rubber, in addition to the rubber sheet, aids in pressure distribution during molding.

3,737,277

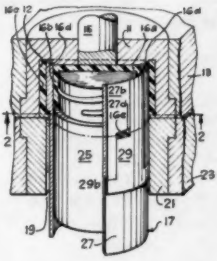
MOLD STRUCTURE FOR MOLDING SKIRTED CLOSURES HAVING INTEGRAL LUGS ON THE INSIDE SURFACE THEREOF

Gerhardt E. Uhlig, 5875 North Yermo, Apt. E-4, Toledo, Ohio

Filed July 19, 1971, Ser. No. 163,798

Int. Cl. B29c *1/00*; B29d *1/00*; B29f *1/14*; B29g *1/00*

U.S. Cl. 425—438 **16 Claims**



A mold structure for forming skirted closure caps having lock lugs thereon. said structure featuring principally a pair of axially reciprocable telescoping members, the inner serving as a principal molding core, said members being capable of telescoped relationship by reason of recessed peripheral regions on the one and intermeshing fingers on the other, said fingers and recesses cooperating to leave voids definitive of said lugs, said members being disengageable through a combination of axial and rotary movement to free said lug from said void.

3,737,278

MOULD CLOSING MEANS

Friedrich Putzler, Meinerzhagen/Westphalia, Germany, assignor to Battenfeld Maschinenfabriken G.m.b.H., Meinerzhagen, Germany

Filed Jan. 13, 1972, Ser. No. 217,564

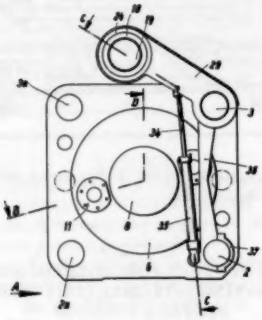
Claims priority, application Germany, Feb. 25, 1971, P 21 09 598.7

Int. Cl. B29f *1/06*

U.S. Cl. 425—450 **5 Claims**

A mould closing means, in particular for die-casting and injection moulding machines for metals and synthetic materials, having a fixed mould support plate received on pillars, a fixed end plate and a mould support plate, which can be moved between the latter from the open into the closed position, by means of at least two piston-cylinder arrangements engaging the fixed mould support plate or the end plate, a pressure element serving to produce the closing pressure being secured to the end plate, and a pressure plate being located thereon which can be swung from the engaged position between the pressure element and movable mould support plate, about a

pillar, into a disengaged position, which is mounted to move axially and which can be infinitely adjusted to various lengths, which is characterized in that the swinging lever supporting the pressure plate is received on the pillar in a pivot bearing



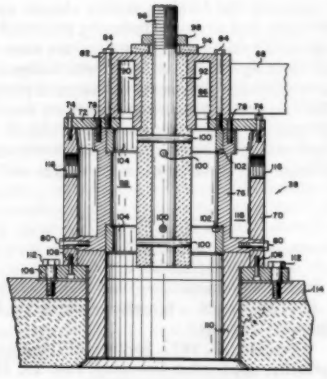
fixed in axial direction, and the pressure plate is received in the swinging lever so as to be axially movable against the action of springs, the travel of the springs being smaller than the stroke of the pressure element.

3,737,279

IMPULSE BURNER SYSTEM AND BURNER THEREFOR

Steele D. Williams, Chattanooga, Tenn., assignor to F. Edward Harrington, Willowdale, Ontario, Canada, and Lloyd F. Anderson, Deerfield, Wis.

Filed Mar. 1, 1972, Ser. No. 230,909
Int. Cl. F23r *1/06*
U.S. Cl. 431—158 **12 Claims**



A burner system comprising a rotary shaft having an eccentric thereon, means for rotating the shaft, a pump rod connected to the eccentric for delivering a pulsating flow of a fuel to a burner where it is mixed with air, electrical ignition means driven by the shaft, a spark gap means associated with the burner for igniting the gaseous mixture, and the burner structure used in the system.

ERRATUM

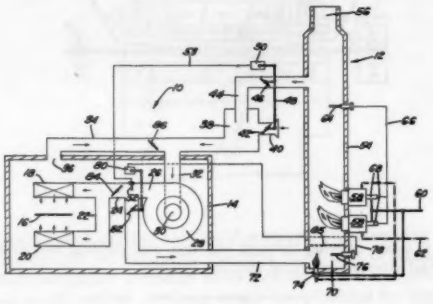
For Class 431—352 see:
Patent No. 3,737,281

3,737,280

EMISSION-CONTROLLED PAINT LINE HEAT SOURCE

Theodore Q. Cromp, Placentia, Calif., assignor to Hunter Engineering Co., Inc., Riverside, Calif.

Filed Apr. 14, 1972, Ser. No. 244,149
Int. Cl. F27b *9/40*
U.S. Cl. 432—41 **4 Claims**



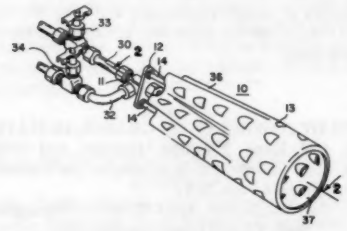
A paint line oven and heat source comprising a stack having fuel-fired burners in the lower portion thereof, and a solvent-burner section at the bottom of the stack. A blower intake duct is connected to the stack above the burners and draws off part of the hot exhaust from the stack. This is mixed with fresh air and circulated through the oven, where it evaporates paint solvent. A portion of the solvent-laden air is bled off to the solvent-burner section, where the solvent vapor is ignited and burns, adding its heat to the heat of the burners. A first temperature sensor in solvent-burner section actuates a valve to increase the amount of oven atmosphere bled off to the solvent-burner section as the temperature rises. A second sensor responds to the temperature in the upper part of the stack to reduce the heat output of the burners as the heat of solvent combustion raises the stack temperature. A third sensor in the blower outlet duct actuates valves to vary the relative proportions of hot flue gas and fresh air, according to the temperature in the oven.

3,737,281

FUEL MIXING SHROUD FOR HEATING TORCHES

Carl R. Guth, 10215 N. 38th St., Phoenix, Ariz.

Filed Sept. 27, 1971, Ser. No. 184,078
Int. Cl. F23d *15/00*
U.S. Cl. 431—352 **10 Claims**



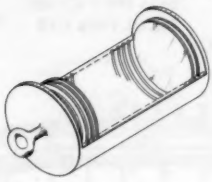
A shroud for a fuel burning torch deformated to form a fluted configuration tapering outwardly from its fuel and air inlets to utilize air aspiration to draw fuel from a nozzle tip and to mix the air with expanding gases or liquids in a highly efficient manner to effect complete combustion.

3,737,282

METHOD FOR REDUCING CRYSTALLOGRAPHIC DEFECTS IN SEMICONDUCTOR STRUCTURES

Eric W. Hearn, Wappingers Falls; Guenter H. Schwuttke, Poughkeepsie; and Erich H. Tekaat, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,652
Int. Cl. F27b *21/00*, *17/00*
U.S. Cl. 432—6 7 Claims



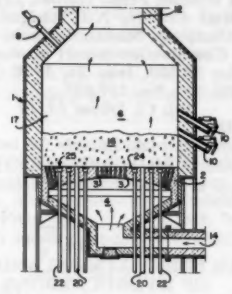
A method for fabricating semiconductor structures, wafer and devices with reduced thermally induced crystallographic defects comprising (a) supporting said wafers in close proximity to one another, (b) heating said wafers to an elevated temperature, (c) maintaining a uniform circumferential heat mass surrounding said wafers, (d) immediately withdrawing said material from the heating zone, and (e) symmetrically cooling said wafers.

3,737,283

FLUIDIZED SOLIDS REACTOR

Frank G. Nikles, Nazareth, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed Nov. 26, 1971, Ser. No. 202,196
Int. Cl. C22b *1/10*; F27b *15/10*
U.S. Cl. 432—58 6 Claims



A fluidized solids reactor which is capable of using either a gaseous fuel or a liquid fuel. The reactor employs a fuel system capable of supplying either a gas or a liquid to novel nozzles. The nozzles disperse the fuel throughout the fluidized bed of pulverulent material. Each nozzle includes a pair of concentric tubular members each opening into the fluidized bed. When gas is used as fuel, it is supplied to the outer tube. When oil is used as a fuel, it is supplied to the inner tube of the nozzle and air under pressure is also supplied to the inner tube. In addition, when liquid fuel is used, air under pressure is supplied to the outer tube for cooling the inner pipe.

CHEMICAL

3,737,284

TRIS(HYDROXYMETHYL)PHOSPHINE PHOSPHATES AS FLAME RETARDANTS FOR TEXTILE MATERIALS

Samuel James O'Brien, Dunellen, and Richard Frederick Stockel and William Frank Herbes, Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 50,360, June 26, 1970. This application Apr. 23, 1971, Ser. No. 137,037

Int. Cl. D06m *13/12*

U.S. Cl. 8—183 **4 Claims**

Durable flame retardant finishes for textiles comprising aqueous solutions of tris(hydroxymethyl)phosphine, phosphoric acid and a methylolated nitrogenous cellulose reactant.

3,737,285

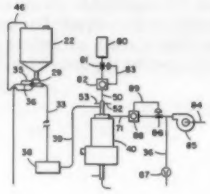
APPARATUS FOR CRACKING AND RECOVERY OF HYDROCARBONS

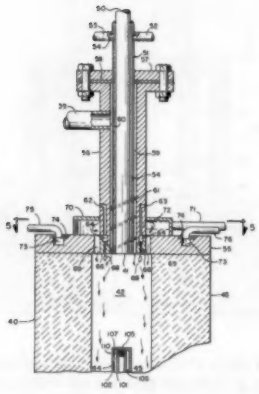
Harold N. Hicks, Jr., Huntington, W. Va., assignor to Ashland Oil, Inc., Houston, Tex.

Original application July 31, 1967, Ser. No. 657,342, now Patent No. 3,565,968, dated Feb. 23, 1971. Divided and this application Oct. 26, 1970, Ser. No. 84,204

Int. Cl. C07c *11/24;* **C10g** *9/38*

U.S. Cl. 23—277 R **1 Claim**





This application discloses apparatus for cracking hydrocarbon feedstocks, in which a solid carbonaceous fuel is burned within a cracking zone to supply the temperature and the heat required for the endothermic cracking reaction. A reactor is also disclosed which has in it an eductor tube that is of reduced cross-sectional area with respect to the cracking chamber for preferentially recovering from the interior of the reactor a stream rich in cracked products and lean in combustion products and ash.

3,737,286

DEVICE FOR THE COMBUSTION OF BURNABLE COMPONENTS OF EXHAUST GASES

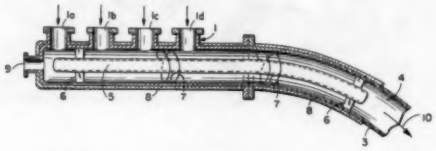
Siegfried Kofink, Lenzhalde, Germany, assignor to J. Eberspacher, Esslinger, Germany

Filed Apr. 20, 1971, Ser. No. 135,548

Claims priority, application Germany, May 16, 1970, P 20 24 034.0

Int. Cl. F01n *3/10*

U.S. Cl. 23—277 C **9 Claims**



A device for the combustion of the burnable components of exhaust gases includes a conduit or tube for the passage of the exhaust gases and a heat pipe mounted within the conduit preferably at a spaced location from the interior walls in order to permit passage of the exhaust gases around the heat pipe and through the conduit. The device also includes means for directing an air supply into the exhaust conduit in order to aid in the combustion of exhaust gases under certain exhaust gas conditions. The heat pipe comprises a tubular zone closed on all sides and evacuated on the interior. A capillary fabric is arranged adjacent the inside face and the pipe is filled with a quantity of a volatile liquid, for example sodium or potassium. Such a pipe has a property of being capable of transferring heat with about 10 times the conductivity of copper. The practical construction is such that the temperature gradient over the entire length of the heat tube is substantially 0.

3,737,287

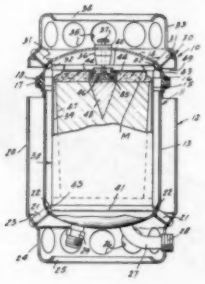
HIGH PRESSURE OXYGEN GENERATOR

John P. Churchill, Indiatlantic, and Tommy Lewis Thompson, Melbourne, Fla., assignors to Life Support, Inc., Melbourne, Fla.

Filed May 17, 1971, Ser. No. 143,852

Int. Cl. B01j *7/00*

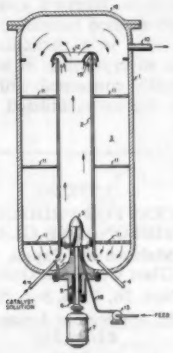
U.S. Cl. 23—281 **10 Claims**



A heat shielded pressure vessel for replaceable chemical oxygen generator canisters receiving oxygen generated from said canisters for delivery to an outlet hose or the like for feeding a welding or cutting torch. The pressure

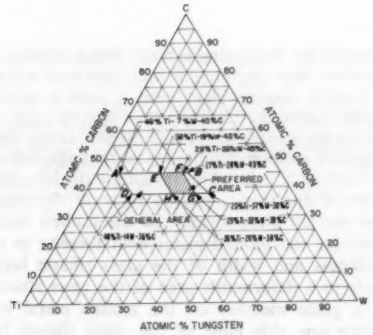
vessel has a cap portion and a main body portion easily and quickly sealed together by a V-band coupler hoop. The cap carries a striking pin to explode a percussion cap in the lid of the canister, a relief valve is provided in the pressure vessel and an outlet conduit extends from the bottom of the vessel to a side coupling for easy attachment to a hose.

3,737,288
ANTIFOULING DEFLECTOR IN OLEFIN POLYMERIZATION REACTORS
Jack M. Hochman, Boonton, N.J., assignor to Esso Research and Engineering Company
Filed June 18, 1971, Ser. No. 154,525
Int. Cl. C08f *1/98*
U.S. Cl. 23—285 **6 Claims**



A semicircular flow deflector is mounted at the discharge end of a draft tube-type polymerization reactor thereby directing the flow in a turbulent stream along the outer wall of the draft tube to prevent fouling by the buildup of polymer product on the draft tube.

3,737,289
CARBIDE ALLOY
Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed July 29, 1970, Ser. No. 59,061
Int. Cl. B22f *3/12*
U.S. Cl. 29—182.7 **19 Claims**



COMPOSITION TRIANGLE SHOWING CLAIMED COMPOSITION AREAS FOR Ti-W-C-BASED ALLOYS

Carbide-metal composites of superior tool qualities are prepared from substoichiometric carbon-deficient monocarbide alloys based on titanium, tungsten and carbon, and binders consisting of iron metal group alloys. The improved tool qualities are based in part on the discovery that single-phased monocarbide alloys with substantially larger tungsten concentrations than in the commercially-used, carbon-saturated carbides are possible at substoichiometric compositions (5 to 12 atomic percent carbon deficiency). The microstructure is characterized by fine monocarbide grains embedded in the binder alloy matrix. A beneficial small grain size in substantially carbon-deficient (8 to 12 atomic percent) monocarbide alloys is obtained by in situ precipitation reactions in the larger, premilled carbide grains during fabrication.

3,737,290
SINTERED TITANIUM ALLOY
Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,717
Claims priority, application Germany, Sept. 22, 1970, P 20 46 614.2
Int. Cl. B22f *3/00*
U.S. Cl. 29—182.7 **3 Claims**

The hardness of sintered titanium and sintered titanium alloys is increased without affecting significantly the density thereof by using as the sinter powder a mixture of from 40% to 90% by weight of powdered titanium or titanium alloy and from 10% to 60% by weight of a powdered hard substance consisting of one or more of the carbides of the metals titanium, chromium or vanadium.

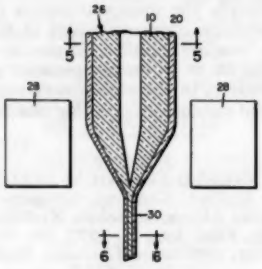
3,737,291
PROCESS FOR REFORMING HEAVY HYDROCARBONS
Pierre Lhonore, Douai, Jacques Quibel, Maisons-Laffitte, and Michel Senes, Saint-Nazaire, France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques
No Drawing. Continuation-in-part of application Ser. No. 758,768, Sept. 10, 1968. This application July 23, 1971, Ser. No. 165,699
Claims priority, application France, Sept. 12, 1967, 120,743
Int. Cl. C01b *2/22*
U.S. Cl. 48—214 **13 Claims**

A process for the catalytic reforming with steam in a fluidized bed of heavy hydrocarbons with a boiling point higher than 220° C., carried out under an effective pressure of 2 to 150 bars, in which the reforming mixture is introduced to the catalyst in the form of catalytic particles, of a solid solution of nickel oxide and refractory oxides, with a grain size which is between 1 mm. and 60μ, at a temperature between 300 and 700° C., the volumetric speed on the fluidized bed is between 5 and 0.1 litre/hour per litre of catalyst, the ratio between steam and carbon in moles being between 0.75 and 3.0 and without regeneration or reoxidation of the catalyst.

3,737,292
METHOD OF FORMING OPTICAL WAVEGUIDE FIBERS
Donald B. Keck, Big Flats, Peter C. Schultz, Painted Post, and Frank Zimar, Hammondsport, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,841
Int. Cl. C03c *25/06*
U.S. Cl. 65—3 **17 Claims**

A method of forming an optical waveguide by forming a first coating of glass having a predetermined index of refraction on the outside peripheral wall surface of a substantially cylindrical starter rod or member. Thereafter, a second coating of glass is applied to the peripheral outside surface of the first coating, said second coating having a preselected index of refraction less than the index of refraction of the first coating. The starter rod or

member is removed from the assembly following the application of either the first or second coating. The resulting substantially cylindrical hollow assembly is heated and drawn to reduce the cross-sectional area and



to collapse the first and inner coating of glass to form a fiber having a solid cross-sectional area. The collapsed first and inner coating forms the fiber core and the second coating forms the cladding for the fiber.

3,737,293

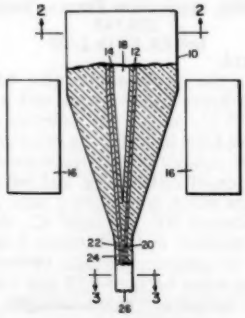
METHOD OF FORMING AN ECONOMIC OPTICAL WAVEGUIDE FIBER

Robert D. Maurer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,842

Int. Cl. C03c *25/06*

U.S. Cl. 65—3 **18 Claims**



A method of forming an optical waveguide by first forming a coating of glass on the inside wall of a glass tube, the glass tube and the first coating being of substantially similar material. Thereafter, a second coating of glass is applied to the inside wall of the glass tube over the first coating, said second coating having a preselected different index of refraction from that of the first coating. The glass tube and coating combination is thereafter drawn to reduce the cross-sectional area and to collapse the second and inner coating of glass to form a fiber having a solid cross-sectional area. The collapsed inner coating forms the fiber core and the first coating forms the cladding for the fiber while the exterior glass tube provides structural strength for the fiber.

3,737,294

METHOD FOR MAKING MULTI-LAYER LAMINATED BODIES

William H. Dumbaugh, Jr., Painted Post, James E. Flannery and John E. Megles, Corning, and John A. Smith, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Aug. 28, 1970, Ser. No. 68,055

Int. Cl. C03b *5/26;* **C03c** *3/22*

U.S. Cl. 65—33 **13 Claims**

This invention relates to high strength glass, glass-ceramic, or glass and glass-ceramic laminated articles which are produced through a continuous hot-forming process wherein glass batches are melted for the individual laminae and these laminae are essentially simultaneously fused together and shaped into a laminated structure of a desired configuration. Where a glass-ceramic lamina is sought, the initially-formed laminated glass article is subsequently heat treated in a particularly-defined manner to cause the glass to crystallize in situ. The present invention is specifically concerned with viscosity relationships obtained in the melts utilized in forming the individual laminae.

3,737,295

PROCESS FOR PRODUCING A RIBBON-LIKE GLASS

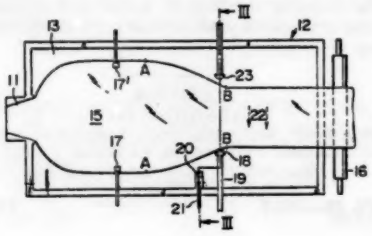
Hideo Mitsuno, Maizuru-shi, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Nov. 20, 1970, Ser. No. 91,325

Claims priority, application Japan, Nov. 24, 1969, 44/94,535

Int. Cl. C03b *18/02*

U.S. Cl. 65—99 A **4 Claims**



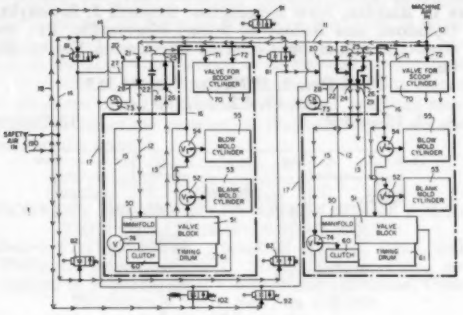
A process for producing a glass ribbon having a thickness smaller than the equilibrium thickness which comprises feeding molten glass onto a molten metal bath, gradually cooling the resulting glass ribbon while advancing it over the molten metal bath, withdrawing the solidified glass ribbon from the molten metal bath, and advancing it through a lehr. The invention further comprises the steps of applying a pulling force to the ribbon-like layer of molten glass formed on the molten metal bath from outside the molten metal bath thereby to reduced the thickness and width of the glass ribbon layer continuously in a deformable area of the glass ribbon, providing a guide member on the molten metal bath for contacting one side edge of the glass ribbon layer to control the advancing direction of the glass ribbon, and providing a weir in that area of the molten metal bath on which the glass ribbon is not present and which is in proximity to the guide member to obstruct the convection of the molten metal bath in a direction parallel to the advancing direcion of the glass ribbon.

3,737,296

SAFETY VALVE SYSTEM FOR GLASSWARE FORMING MACHINE

Alphonse W. Faure, Philadelphia, and Harold L. Caldwell, Pleasantville, Pa., assignors to C.S.S. Machine and Tool Company, Inc., Philadelphia, Pa.

Filed Aug. 6, 1971, Ser. No. 169,629
Int. Cl. C03b 9/40
U.S. Cl. 65—159 4 Claims



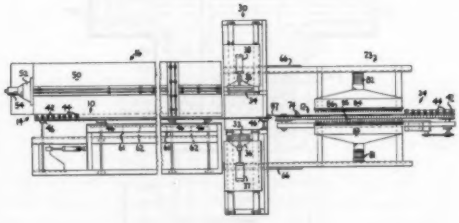
In multi-section glassware forming machinery, a safety valve system is provided which enables the attendant to shut down any selected one of the sections by manually operating a valve switch at any one of two or more locations without disturbing the continued operation of the other sections. Also, the entire multi-section machine may be shut down from one of two or more locations.

3,737,297

APPARATUS FOR PRESS BENDING GLASS SHEETS

Robert G. Frank, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 157,475, June 28, 1971. This application Feb. 9, 1972, Ser. No. 224,786
Int. Cl. C03b 23/02
U.S. Cl. 65—273 8 Claims



This invention relates to treating glass sheets, and particularly relates to press bending glass sheets by a movable press bending apparatus that engages a glass sheet heated to its deformation temperature and moves with the glass sheet to transfer the sheet while it is being shaped by pressure engagement from a first conveyor to a second conveyor. Means is provided to tilt the conveyors to provide gaseous support in different oblique planes for different thicknesses of glass sheets processed.

3,737,298

2-FLUORO-3-PHENYL-2-CYCLOBUTENONE AS PLANT AUXIN

Max Jae Fielding, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 4, 1971, Ser. No. 150,175
Int. Cl. A01n 21/02
U.S. Cl. 71—77 13 Claims

2-fluoro-3-phenyl-2-cyclobutenone is useful as a plant auxin and in particular increases yield in agricultural plants.

3,737,299

METHOD OF COMBATING NUT SEDGE

Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 17, 1971, Ser. No. 144,246
Int. Cl. A01n 9/22
U.S. Cl. 71—94 4 Claims

Nut sedge is combated with quaternary 4-phenylpyridinium halides, for example 1-methyl-4-phenylpyridinium chloride which is toxic to nut sedge and a very limited number of crops, particularly when used prior to emergence of the crop and subsequent to the emergence of nut sedge.

3,737,300

DISPERSION STRENGTHENED TITANIUM ALLOYS

Robert Lacock Cairns and John Stanwood Benjamin, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 6, 1971, Ser. No. 159,813
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 BC 8 Claims

A wrought composite titaniferous and/or zirconiferous metal powder is provided comprised of a plurality of constituents, the composite powder being advantageously in the heavily cold worked condition and in whicn particles thereof are characterized metallographically by an internal structure comprised of the starting constituents intimately united together and mutually interdispersed. The process employed in producing the composite metal powder resides in providing a dry charge of attritive elements and a metallic titaniferous and/or zirconiferous powder mass containing at least one nonmetallic constituent inert to said metallic powder, subjecting the charge to high energy agitation milling under conditions inert to titanium and zirconium, preferably above room temperature, in which the charge is maintained kinetically in a highly activated state of relative motion, and continuing the milling under controlled inert conditions to produce wrought composite metal powder in which particles thereof are characterized metallographically by an internal structure in which the metallic and non-metallic constituents are substantially mutually interdispersed.

3,737,301

PROCESS FOR PRODUCING IRON-MOLYBDENUM ALLOY POWDER METAL

Vincent Hao Kwong Chu, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,395
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 BA 15 Claims

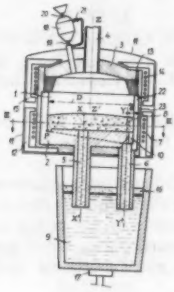
Process for producing iron-molybdenum alloy powder metal from molybdenum trioxide and iron oxide. The

oxides are balled and heat treated in a furnace in the presence of a solid reductant. The oxides are reduced to metallic elements, the molybdenum diffused into the iron and the balls hardened to form pellets. The pellets are crushed and comminuted to a desired size.

3,737,302
METHOD OF TREATMENT OF LIQUID STEEL UNDER VACUUM

Jacques Pomey, Billancourt, France, assignor to Societe des Aciers Fins de l'Est, Billancourt, France

Filed July 15, 1968, Ser. No. 744,744
Claims priority, application France, July 27, 1967, 115,946
Int. Cl. C21c 5/52; C22d 7/00; H05b 5/12
U.S. Cl. 75—10 **9 Claims**

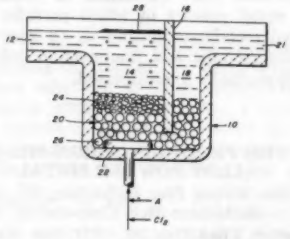


A method of de-gasification of steel in fusion poured into a casting ladle in which are immersed the lower extremities of two vertical refractory pipes, the upper parts of which open into the bottom of a vacuum-tight refractory chamber, the one in the proximity of its center and the other into its peripheral portion, a constant vacuum ensuring the rise of the steel bath and its stabilization at a pre-determined height being maintained in said chamber, the steel being heated by induction, a circulation of the liquid steel through the pipes between the ladle and the chamber being effected by means of an inductor winding surrounding the chamber and for a period sufficient for the desired degree of purification under vacuum to be obtained.

3,737,303
REFINING MOLTEN ALUMINUM WITH CHLORINE-ACTIVATED BODIES

Lee C. Blayden, New Kensington, Kenneth J. Brondyke, Oakmont, and Robert E. Spear, Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 2, 1970, Ser. No. 94,477
Int. Cl. C22b 21/06
U.S. Cl. 75—68 R **10 Claims**

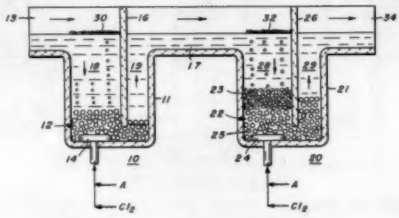


The sodium content of molten aluminum along with the oxide and hydrogen gas content, is reduced by an improved process wherein the molten aluminum is passed through a bed of refractory bodies. The refractory bodies have their surfaces activated by chlorine and are reactive to the sodium impurities. The refractory body bed is continuously flushed with a non-reactive gas flux to remove chlorine reaction products formed in the bed. The improvement is capable of chlorine fume-free operation and accordingly is especially useful where pollution control is important.

3,737,304
PROCESS FOR TREATING MOLTEN ALUMINUM

Lee C. Blayden, New Kensington, Kenneth J. Brondyke, Oakmont, and Robert E. Spear, Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 2, 1970, Ser. No. 94,313
Int. Cl. C22b 21/06
U.S. Cl. 75—68 R **13 Claims**

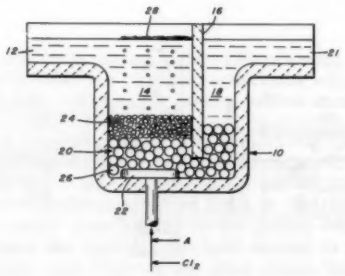


The sodium, oxide and hydrogen content of molten aluminum is drastically reduced by moving the molten aluminum through two purifying zones. In each zone the molten aluminum is moved through a bed of refractory bodies in contact with fluxing gases. Conditions are carefully maintained to remove impurities while preventing deterioration of the beds. The process can be operated on a pollution free basis and yet achieve extremely low impurity levels.

3,737,305
TREATING MOLTEN ALUMINUM

Lee C. Blayden, New Kensington, Kenneth J. Brondyke, Oakmont, and Robert E. Spear, Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 2, 1970, Ser. No. 94,391
Int. Cl. C22b 21/06
U.S. Cl. 75—68 R **14 Claims**



This is an improvement in a molten aluminum refining process of the type described in U.S. Pat. 3,039,864 where a non-reactive fluxing gas is passed through molten aluminum as it moves through a bed of refractory bodies to remove from the aluminum hydrogen gas and non-metallic impurities such as oxides. According to the improvement a relatively small stream of a reactive chlorinaceous fluxing gas introduced along with the non-reactive fluxing gas

substantially increases the useful life of the refractory body bed. The process is capable of chlorine fume-free operation.

3,737,306

METHOD FOR TREATING TITANIUM SCRAP

Charles J. Byrnes and George L. Vassilaros, Mount Lebanon Township, Allegheny County, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

No Drawing. Filed July 7, 1971, Ser. No. 160,548

Int. Cl. C22b *53/00*

U.S. Cl. 75—101 R **3 Claims**

Removal of refractory metal inclusions from titanium scrap in particulate form by contacting the titanium scrap with a solvent of potassium hypochlorite, potassium hydroxide and potassium fluoride at an elevated temperature of about 100° C., whereby the refractory metal inclusions are dissolved in the solvent. Conventional practices may be used to detect the presence of the dissolved refractory metal in the solvent.

3,737,307

RECOVERY OF METALLIC NICKEL FROM SOLUTION OF CORRESPONDING SALT

Edward F. Fitzhugh, Jr., Cleveland Heights, Ohio, and Philip D. Bush and Don C. Seidel, Golden, Colo., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 1, 1971, Ser. No. 203,770

Int. Cl. C22b *23/04*

U.S. Cl. 75—109 **29 Claims**

The process disclosed herein comprises the process of cementing or precipitating nickel from a solution containing nickel salts by the addition of iron particles under an overpressure of at least 35 p.s.i.g., preferably at least 60 p.s.i.g., and at a temperature of at least 60° and less than 100° C. The iron particles preferably have a thin coating of copper thereon. The use of overpressure permits a lower temperature to be used in the recovery process, favors more complete cementation of the nickel than without the overpressure, and results in a lower sulfur content in the cemented metal so that the product may be used directly in alloying furnaces without a prior roasting step to reduce the sulfur content.

3,737,308

CHROMIUM-IRON ALLOY

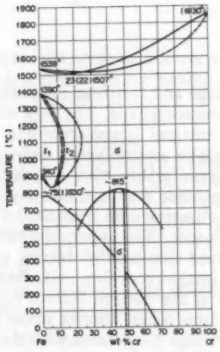
Naoji Iwai, Tokyo, and Takashi Kuse, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 26, 1971, Ser. No. 166,218

Claims priority, application Japan, July 22, 1970, 45/63,564

Int. Cl. C22c *37/10, 39/02*

U.S. Cl. 75—124 **1 Claim**



A sealing alloy comprising 15–30% by weight Cr, 0.1–0.9% by weight Ti, 0.15–1.5% by weight Al, 0–0.5% by weight Mo and balance Fe is provided. The oxide film formed on the surface of this alloy has very low electric resistance and therefore electric contact can be established through the oxide film.

3,737,309

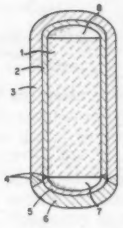
NOVEL PLATINUM-RHODIUM-TUNGSTEN ALLOY

Chain T. Liu and Henry Inouye, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 15, 1972, Ser. No. 226,500

Int. Cl. C22c *5/00*

U.S. Cl. 75—172 R **4 Claims**



A novel alloy composition comprising 25 to 30 wt. percent rhodium, 6 to 10 wt. percent tungsten with the remainder being platinum.

3,737,310

BACKGROUND REDUCTION

Christopher Snelling and William S. Little, Penfield, and Robert H. Townsend, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of abandoned application Ser. No. 863,608, Oct. 3, 1969. This application Dec. 9, 1971, Ser. No. 206,467

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **7 Claims**

By subjecting a photoelectrophoretic imaging suspension to a D.C. corona discharge current prior to imagewise exposure, background degradation can be measurably reduced.

3,737,311

ELECTROSTATIC PARTICLE TRANSFER IMAGING PROCESS

John B. Wells, Brighton, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of abandoned application Ser. No. 773,046, Nov. 4, 1968. This application June 4, 1971, Ser. No. 150,211

Int. Cl. G03g *13/14, 13/22*

U.S. Cl. 96—1 R **15 Claims**

A thin electrically insulating transfer interlayer, which is selectively releasable by area, is sandwiched between a photosensitive layer and a receiver member. The sandwich is exposed to an image pattern of activating electromagnetic radiation for said photosensitive layer while maintaining an electric field across said sandwich. The receiver member is then stripped away to selectively transfer areas of said interlayer in image configuration to said receiver member leaving a complementary image pattern of selective areas of interlayer on said photosensitive layer.

3,737,312

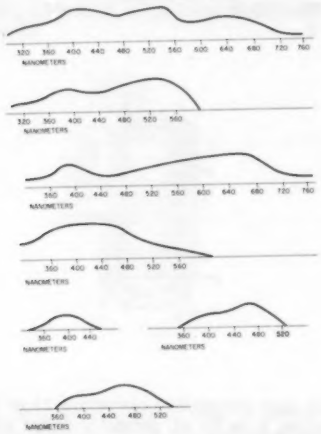
MULTICOLOR PHOTOGRAPHIC FILM ELEMENTS COMPRISING A MINIMUM SENSITIVITY SOUND TRACK RECORDING SILVER HALIDE EMULSION LAYER AND PROCESSES FOR THEIR USE

John L. Baptista and Albert C. Smith, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of abandoned application Ser. No. 100,614, Dec. 22, 1970. This application Mar. 16, 1972, Ser. No. 235,379

Int. Cl. G03c *1/16, 7/24, 5/50*

U.S. Cl. 96—4 21 Claims



Novel photographic elements are provided having a picture recording area and a sound track recording area comprising a transparent support having coated thereon three picture recording color-forming units which are so disposed and sensitized that each is essentially sensitive to a different primary color region of the visible spectrum, such color-forming units having minimum sensitivity to at least one region of the spectrum bridging adjacently sensitized color-forming units and an auxiliary image or sound track recording silver halide emulsion layer sensitive to such region of minimum sensitivity, said layer not forming an image upon image-forming exposure of the picture recording units, the color-forming units of adjacent spectral sensitivity having a photographic speed of at least 2 times the photographic speed of the auxiliary layer when selectively exposed in the region of minimum sensitivity. Subsequent to imagewise exposure of the picture and sound track recording areas, the element is processed by the novel method of processing which comprises (A) forming a picture record comprising silver and a nondiffusible dye in the picture recording area and an auxiliary image record or sound track record comprising silver in the sound track area and contacting the silver of the auxiliary layer with a ballasted silver bleach inhibitor and (B) removing the bleachable silver images remaining after step (A) and the residual or undeveloped silver halide.

3,737,313

PAPER RADIOGRAPHIC ELEMENT CONTAINING SILVER HALIDE GRAINS RHODIUM SALT SENSITIZED, THIOETHER RIPENED AND POLYVALENT METAL ION STABILIZED

William J. Rosecrants, Brockport, and Frederick A. Pomeroy, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 17, 1971, Ser. No. 154,164

Int. Cl. G03c *1/92, 5/04*

U.S. Cl. 96—27 R 8 Claims

Disclosed are improved radiation-sensitive image recording elements particularly useful in non-destructive testing which elements comprise a support carrying a thioether ripened, polyvalent metal ion stabilized radiation-sensitive silver halide layer of low coating density dispersed in a hydrophilic colloid layer of substantially higher coating density. The silver halide grains are coarse grained and the elements can optionally contain incorporated developer agents and can optionally be combined with integral or non-integral luminescent phosphor-containing intensifying screens. Processes for non-destructive testing and image recording are likewise disclosed.

3,737,314

MANUFACTURE OF PRINTING ELEMENTS BY A PHOTORESIST CHEMICAL ETCHING SYSTEM

Robert L. Ruleff, Kettering, William P. Lee II, Tipp City, Jay W. Childress, Dayton, and Donald H. Knapke, Troy, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation of abandoned application Ser. No. 53,151, July 8, 1970. This application Feb. 29, 1972, Ser. No. 230,536

Int. Cl. G03c *5/00;* G03f *7/00*

U.S. Cl. 96—36.3 11 Claims

This process comprises the use of two dissimilar photoresist images. The top photoresist image is superimposed over and extends beyond the bottom photoresist image. The top photoresist image functions as a resist while acid etching a pattern which is larger than required. The top photoresist image is then removed. The bottom photoresist image remains in place and functions as a resist while acid etching the final and well-defined pattern.

3,737,315

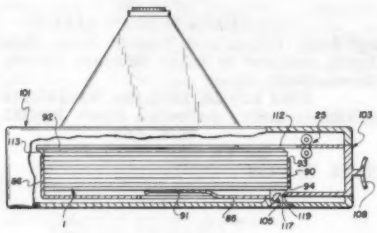
FILM CARTRIDGE AND ASSEMBLAGE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,466

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C 8 Claims



An assemblage and cartridge for photographic film units of the self-processing type. The film units each include a preregistered, integral image-recording unit supported on a rigid frame. The assemblage is defined by a plurality of the film units, preferably with a dark or cover slide, that cooperate to provide a substantially light-tight stack from which the film units can be transported only in the proper direction and order. The uppermost film unit, or the dark slide, is removed first and its frame, preferably after removal of the image-recording unit, then can be reinserted into the stack at the bottom thereof for storage and later disposal with the other frames upon exhaustion of the pack. The cartridge cooperates with the stacked film units to facilitate their handling, to provide further light tightness, and to insure proper transporting of the film units from the back into the stack.

3,737,316

TWO-EQUIVALENT SULFONAMIDO COUPLERS

Ilmari Fritiof Salminen and Anthony Loria, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,684
Int. Cl. G03c 7/00
U.S. Cl. 96—56.6 28 Claims

4-sulfonamido-substituted two-equivalent phenol- or α-naphthol-type cyan dye-forming photographic couplers in color developing compositions, in color photographic silver halide emulsion compositions; elements having such emulsion compositions coated thereon, and processes utilizing such elements.

3,737,317

PHOTOGRAPHIC ELEMENTS AND PROCESSES

Robert D. Nicholas and James D. Clifford, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,444
Int. Cl. G03c 1/48, 1/76, 3/00
U.S. Cl. 96—74 12 Claims

A silver precipitating layer is coated over or under fine-grain relatively slow speed silver halide emulsion layers, and these layers are coated over a faster image-forming silver haloiodide image-forming emulsion layer. The silver precipitating layer, when coated between the fine-grain, slow speed silver halide emulsion and the faster image-forming silver haloiodide emulsion layer, reduces migration of soluble silver salts out of the fine-grain silver halide into the image-forming emulsion layer. When coated over the fine-grain silver halide emulsion layer, the silver precipitating layer inhibits diffusion of soluble silver salts out of the element during processing, and thereby reduces the rate at which silver deposits are built up on rollers used in equipment which transports the film through photographic processing solutions.

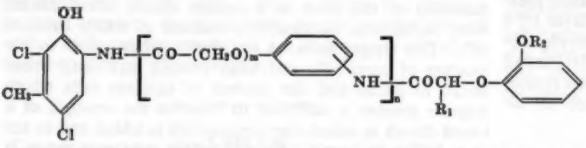
3,737,318

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Isaburo Inoue, Teruo Hanzawa, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed May 13, 1971, Ser. No. 143,240
Claims priority, application Japan, May 14, 1970, 45/40,491
Int. Cl. G03c 1/40
U.S. Cl. 96—100 11 Claims

A light-sensitive silver halide color photographic material containing as a coupler a compound of the general formula,



wherein R_1 is a hydrogen atom or a lower alkyl group; R_2 is an aliphatic hydrocarbon residue having 8 to 18 carbon atoms; n is zero or 1; and m is zero or 1.

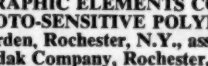
3,737,319

PHOTOGRAPHIC ELEMENTS COMPRISING PHOTO-SENSITIVE POLYMERS

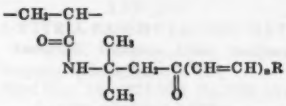
Douglas G. Borden, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,602
Int. Cl. G03c 1/70
U.S. Cl. 96—115 R 2 Claims

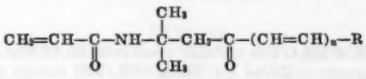
There are disclosed light-sensitive polymers containing recurring groups having the formula



wherein X is a divalent, acyclic organic radical containing at least one ester group or amide group, n is a whole number from 1 to 3 and R is an unsaturated cyclic group such as an aromatic or heterocyclic radical. The preferred polymers disclosed contain recurring groups having the formula



where R is an unsaturated cyclic group such as an aromatic or hetrocyclic group. Two methods of preparing such a polymer are disclosed. According to one method, an aromatic or heterocyclic aldehyde is reacted with a polymer containing diacetone acrylamide units. According to the second method, diacetone acrylamide monomer is first reacted with a heterocyclic or aromatic aldehyde to prepare a light-sensitive monomer having the formula



and the light-sensitive monomer is then homopolymerized or copolymerized with another vinyl monomer. The light-sensitive polymers are useful in photo-mechanical reproduction processes such as for lithographic purposes or as photoresists. The light-sensitive polymers can be spectrally and chemically sensitized. The photopolymerization of the light-sensitive monomers is also disclosed.

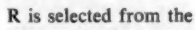
3,737,320

PHOTOPOLYMERIZABLE COPYING COMPOSITION

Roland Dietrich, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,701
Claims priority, application Germany, Dec. 9, 1970, P 20 60 576.9
Int. Cl. G03c 1/68
U.S. Cl. 96—115 P 11 Claims

This invention relates to a photopolymerizable copying composition comprising at least one binder, at least one polymerizable vinyl or vinylidene compound and, as a photoinitiator, at least one compound of the general formula



wherein

R is selected from the group consisting of an alkyl group having 1 to 8 carbon atoms or an aryl group having 6 to 10 carbon atoms, and

R′ is selected from the group consisting of an aryl group having 6 to 10 carbon atoms or an aralkenyl group having 8 to 12 carbon atoms.

3,737,321

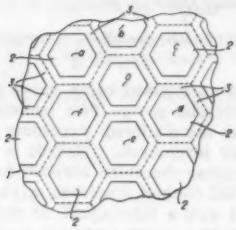
SCREENS USED IN PHOTOMECHANICAL REPRODUCTION

Alfred George Torr, The Old Parsonage, Silverstone, Northamptonshire, England, and Kevin William Canton Webb, Whetstone, England; said Webb assignor to said Torr

Filed Sept. 17, 1971, Ser. No. 181,468
Claims priority, application Great Britain, Oct. 15, 1970, 49,115/70; July 7, 1971, 31,913/71
Int. Cl. G03f 5/00
U.S. Cl. 96—116 6 Claims

A screen for photomechanical reproduction comprises a transparent sheet incorporating a refractive surface of

smooth regular wave-form undulations without discontinuities formed with a pattern of cellular areas by intersecting sets of parallel ridges defining between them a plurality of hollows and providing a lenticular effect upon



transmitted light. The cellular areas may be of rectilinear-sided geometric shape e.g. hexagonal. The screen may be prepared by a procedure including a photochemical or a mechanical process.

3,737,322
TREATMENT OF ARABINOGALACTAN
Robert R. Frey, Huntingdon Valley, Pa., assignor to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,359
Int. Cl. A23g *1/00;* **A23l** *1/26*
U.S. Cl. 99—23 **22 Claims**

The tendency of arabinogalactan, a low-calorie sugar substitute for use in foods, to absorb fat and become unmanageable in food processing operations may be controlled by treating the arabinogalactan with saccharides and other edible polyhydroxy compounds.

3,737,323
CONTINUOUS FERMENTATION PROCESS FOR PRODUCING ALCOHOLIC BEVERAGES
Philipp Berdelle-Hilge, Mainz (Rhine), Germany, assignor to Intermag GmbH, Aarau, Switzerland
Continuation-in-part of abandoned application Ser. No. 758,019, Sept. 6, 1968. This application Aug. 23, 1971, Ser. No. 173,932
Int. Cl. C12c *11/14*
U.S. Cl. 99—31 **14 Claims**

Alcoholic beverages are produced by a continuous and accelerated fermentation process. The process involves passing a fermentable liquid by means of a hydraulic pressure of .2 to 10 atmospheres gauge through a layer of a microorganism deposited on a porous zone whereby the liquid is fermented by the microorganism. The fermented liquid then passes through the porous zone, which retains the microorganism, and is recovered to provide an alcoholic beverage.

3,737,324
ENZYME TREATMENT OF GRAPE PULP FOR WINE PRODUCTION
Vasily Ivanovich Zinchenko, ulitsa Dimitrova 16, kv. 79, Kishinev, U.S.S.R.; Ljudmila Sergeevna Salmanova, ulitsa Korolenko 1, korpus 3, kv. 19, Moscow, U.S.S.R.; and Filipp Leontievich Minchuk, ulitsa Aleshina 6/3, kv. 65, Kishinev, U.S.S.R.
Filed Mar. 24, 1970, Ser. No. 22,325
Int. Cl. C12g *1/02*
U.S. Cl. 99—35 **11 Claims**

A method of treatment of a grape pulp in the process for production of wines, cognac and non-alcoholic beverages in which there is added into the pulp a purified cytolytic enzyme preparation of a culture of fungus *Trichothecium roseum* having an activity of 2500 units and taken in the amount of 0.0001 to 0.1 percent by weight, and the must is separated from the pulp.

3,737,325
PREPARATION OF WINE AND CHEESE FROM MILK
Emmet R. Engel, Oakland, Calif.
(Casa de San Jose, Box 90 SRA, Palmer, Alaska 99645)
No Drawing. Filed July 15, 1970, Ser. No. 55,284
Int. Cl. C12g *1/00;* **A23c** *19/02*
U.S. Cl. 99—35 **12 Claims**

A milk fermentation process and the products formed thereby which constitute milk-wine cheese and milk wine, the former being a food product and the latter an alcoholic beverage. The milk-wine cheese comprises two components which may be separately collected, one of which is milk-wine top cheese and the other milk-wine bottom cheese or residuum. The process includes the steps of adding a fermentation culture and sugar to a quantity of separated fresh milk to initiate fermentation thereof which is then continued to completion in about 111 days. The process is essentially self-sustaining and produces concurrently in the same tank both milk-wine cheese and milk wine each of which can be aged and cured as it is produced.

3,737,326
BEVERAGE CONTAINING EGG ALBUMEN AND WHEY
Jude A. Basso, Normand A. Lemaire, and Charles V. Fulger, Battle Creek, Mich., assignors to Kellogg Company, Battle Creek, Mich.
No Drawing. Continuation-in-part of application Ser. No. 801,142, Feb. 20, 1969. This application July 23, 1971, Ser. No. 165,720
Int. Cl. A23l *1/00;* **A23c** *21/00*
U.S. Cl. 99—78 **9 Claims**

Beverage mix containing sweetener, color, flavor, food acid, and as the source of protein, egg albumen and whey. The whey constitutes from about 20% to about 50% of the protein of the albumen and whey mixture and inhibits the taste and odor of the egg albumen in the final beverage.

3,737,327
BAKERY ADDITIVE AND METHOD
Bromley M. Mayer, Pasadena, and Ralph J. Trickel, Redondo Beach, Calif., assignors to Knudsen Creamery Co. of California, Los Angeles, Calif.
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,341
Int. Cl. A21d *2/26, 2/34*
U.S. Cl. 99—91 **13 Claims**

A bakery additive comprising a mixture of whey proteins with a dried lactose-consuming yeast derived from culturing of the yeast in a cottage cheese whey, cheese whey solids and, optionally, a mixture of edible calcium salts. The weight ratio of the cheese whey solids to the mixture of yeast cells and whey protein may range from 80:20 to 20:80 and the content of calcium salts which may be present is sufficient to improve the strength of a bread dough to which the composition is added and to act as a buffer in keeping the pH within whatever range is desired, such as about 4.8 to about 5.5. The bakery additive is employed in conventional bread doughs at an effective concentration which is sufficient to improve the strength of the bread sidewalls, to increase the bread baked volume, and to improve the texture of the resulting baked product.

3,737,328
APPARATUS AND METHOD FOR PREPARING CONFECTIONERY DROPS
Robert W. Schumann, Brookfield, Wis., assignor to W. R. Grace & Co., New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,369
Int. Cl. A23g *1/20, 3/00;* **B29f** *3/01*
U.S. Cl. 99—134 R **8 Claims**

The invention disclosed is for an apparatus and method for preparing confectionery drops by oscillating wire mem-

bers traverse through a plurality of extruding streams of confectionery material. Drops severed from the extruding streams by the wire members are received on a conveyor belt where the drops cool prior to packaging.

3,737,329
SAUSAGE CASING AND METHOD OF MANUFACTURE
William N. Strelchuk, Bloomfield Hills, Mich., assignor to Hygrade Food Products Corporation, Detroit, Mich.
Filed Sept. 25, 1970, Ser. No. 75,575
Int. Cl. B65b *25/08*
U.S. Cl. 99—175 **9 Claims**

A sausage casing and method of manufacture thereof which begins as a tubular member of sausage casing material which has an end thereof closed by stretching along a convex path and trimmed. Thereafter a pair of cloth tapes are placed on either side of the flattened casing material along marginal longitudinal portions thereof, and tapes being continuous and extending from the sewn end to the open end where a portion of the tape is left loose and then back along the other side of the flattened casing to the sewn end. Thereafter the tape is affixed to the casing material by a stitch wherein portions of the stitching thread extend through the tapes and casing material and portions extend around the marginal edges of the flattened casing material to lock the stitching through the material. The stitching is continued through the loose portion at the open end of the casing. After stitching the casing is inverted to place the cloth tapes on the interior thereof with a loose portion projecting out of the open end of the casing to provide a hanger loop.

3,737,330
PROCESS FOR THE PASTEURIZATION OF EGG WHITES
Willibald F. Kohl, Nanuet, and John C. Sourby, Mount Kisco, N.Y., and Rudolph H. Ellinger, Chagrin Falls, Ohio, assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 694,797, Jan. 2, 1968. This application June 8, 1970, Ser. No. 44,605
The portion of the term of the patent subsequent to July 14, 1987, has been disclaimed
Int. Cl. A23b *5/00*
U.S. Cl. 99—215 **8 Claims**

A process of pasteurizing egg whites which consists of dissolving within said egg whites a food grade alkali polyphosphate material in an amount ranging between 0.20 and 2.0% weight. The pH of the egg whites is then adjusted to a range of between about 8.0 and 10.0. The egg whites are then heated to a pasteurization temperature for a sufficient length of time to pasteurize the egg whites.

3,737,331
THORIA-YTTRIA-BASED CERAMIC MATERIALS
Richard C. Anderson, Chagrin, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 26, 1971, Ser. No. 128,511
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 R **5 Claims**

High density thoria-based ceramic materials are provided consisting essentially in mole percent as calculated from the batch on the oxide basis of 78–96% ThO_2, 2–20% Y_2O_3 and 0.5–5.0% CaO. These materials may be prepared by pressing the mixed powders and sintering them in a hydrogen atmosphere until about theoretical density is obtained.

3,737,332
CLOSED CELL CLAY FOAM AND PROCESS FOR PREPARING SAME
Paul S. Sennett and James P. Olivier, Macon, Ga., and Sydney Ross, Troy, N.Y., assignors to Freeport Minerals Company, New York, N.Y.
No Drawing. Filed June 25, 1971, Ser. No. 156,997
Int. Cl. C04b *31/20*
U.S. Cl. 106—71 **12 Claims**

A clay foam characterized by a closed cell structure and the ability, in its calcined state, to float in water is described. The gas bubbles of the foam are substantially completely encapsulated by walls formed from clay particles. The foam is prepared by generating a foaming gas in an aqueous dispersion of clay particles to which has been added a minor amount of a fatty amine as a foaming agent. A variety of inorganic filler materials can be incorporated into the foam in order to alter or impart new properties to the foam. The foam can be calcined to further alter its properties. The foam has many uses including use as a refractory brick.

3,737,333
METHOD FOR PROCESSING KAOLIN CLAY
Edgar W. Sawyer, Jr., Edison, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.
Filed July 21, 1971, Ser. No. 164,829
Int. Cl. C09c *3/02;* **B03d** *3/00*
U.S. Cl. 106—288 B **1 Claim**

In the wet processing of kaolin clay, the clay crude is initially deflocculated (dispersed) with a synthetic water-soluble salt having an organic polymeric anion. The deflocculated clay then undergoes further processing, including fractionation, flocculating with an agent which must include alum, bleaching, filtration, rinsing and re-deflocculation.

3,737,334
VULCANIZED RUBBER COMPRISING A SILICEOUS PIGMENT, A RUBBER AND AN ORGANIC COUPLING AGENT HAVING AN ACTIVE OLEFINIC LINKAGE
Thomas J. Doran, Norton, Melvin P. Wagner, Barberton, and Henry C. Stevens, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Original application July 7, 1969, Ser. No. 839,644, now Patent No. 3,664,403. Divided and this application Jan. 14, 1972, Ser. No. 217,973
Int. Cl. C09c *1/28;* **B60c** *5/00;* **C08d** *13/20*
U.S. Cl. 106—288 Q **4 Claims**

The novel rubber compound and tire tread made therefrom include a silica-filled unsaturated rubber compound and a reactive olefinic coupling agent such as 5-triethoxysilyl norbornene. The coupling agent is a compound which forms a bond or connection between the rubber polymer and the silica.

3,737,335

METHOD FOR PREPARING A SPECIMEN

Sheldon N. Feinberg, 98 Broadway, Hillsdale, N.J. 07642

No Drawing. Filed July 17, 1970, Ser. No. 55,982
Int. Cl. G02b 21/34
U.S. Cl. 117—72 8 Claims

A process for preparing a specimen to be viewed in a microscope, in which a polyvinyl alcohol (PVA)-fixative-specimen mixture is protected against the deleterious effects of alcohol during the staining procedure. This process may be accomplished by surrounding the PVA-fixative-specimen mixture with a buffer zone. The buffer zone can include any substance or solution that blocks the wetting action of alcohol, for example, water, saline or glycerine to name a few.

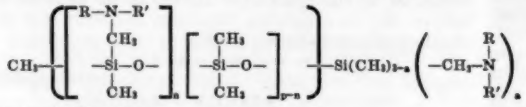
3,737,336

AMINOMETHYL-SUBSTITUTED ORGANOPOLYSILOXANE AS WATER-REPELLENT AND GLOSS-IMPARTING COATING FOR LACQUERED METAL SURFACES

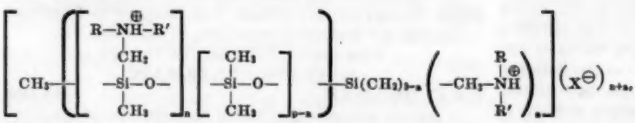
Hans Dietrich Golitz, deceased, late of Cologne-Stammheim, Germany, by Ingrid Golitz, heir, and Walter Noll, Opladen, Karl Schnurrbusch, Leverkusen-Steinbuchel, Klaus Seyfried, Cologne, and Walter Simmler, Odenthal-Globusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Mar. 9, 1970, Ser. No. 17,958. Divided and this application Dec. 22, 1971, Ser. No. 210,944
Int. Cl. B32b 15/08; B44d 1/36
U.S. Cl. 117—75 7 Claims

Excellent hydrophobic properties and pleasant gloss are imparted to solid, especially smooth, surfaces, for example lacquer coatings of the bodies of motor vehicles, by applying thereto, according to the invention, new coating compositions containing as the effective agent an organopolysiloxane which is aminomethyl-substituted on at least two of its siloxane units, corresponding to the formula



or to the formula



in which

p is an integer greater than 25,
a is 0 or 1,
n is an integer greater than $(1-a)$ and smaller than $p/10$,
R and R', independently of one another, are hydrogen atoms or alkyl or cycloalkyl radicals having less than 9 carbon atoms, and
X is a monovalent acid radical.

3,737,337

PROCESS FOR THE PRODUCTION OF MICROGRANULATES

Hildegard Schnoring, Wuppertal-Elberfeld, Gottfried Pampus and Nikolaus Schon, Leverkusen, and Josef Witte, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,044
Claims priority, application Germany, Mar. 4, 1970, P 20 10 115.9
Int. Cl. B44d 1/02; B01j 13/02
U.S. Cl. 117—100 14 Claims

A process for the production of solid, free-flowing spherical microgranulates from a polymer matrix containing solid or liquid particles of a core material embedded therein, wherein

(1) a solution of the shell-forming polymer is prepared in a solvent soluble to at most 15% by weight in water at 20° C.,
(2) a solid or liquid core material is dissolved or dispersed in this solution,
(3) the resulting solution or dispersion ("organic phase A") is suspended in an aqueous liquid (aqueous phase B) that is immiscible with the organic solvent,
(4) the organic solvent is allowed to migrate slowly and under control out of the organic phase A so that the dissolved polymer is deposited onto the surface of the particles dispersed in aqueous phase B, and
(5) the solidified particles, i.e. the microgranulate, are separated off.

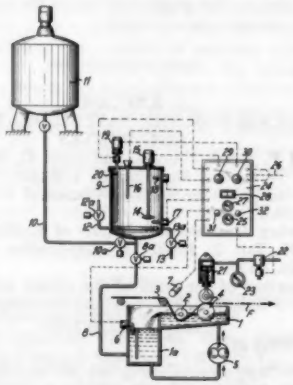
3,737,338

METHOD FOR CONTROLLING THE FILLING OR WEIGHTING ABSORPTION OF A FIBROUS MATERIAL

Hans Kabelitz, Monchen-Gladbach, Germany, assignor to Gebruder Sucker, Monchen-Gladbach, Rhineland, Germany

Continuation of abandoned application Ser. No. 758,477, Sept. 9, 1968. This application June 7, 1971, Ser. No. 150,766
Claims priority, application Germany, Sept. 9, 1967, S 111,702
Int. Cl. B05c 11/10
U.S. Cl. 117—102 L 4 Claims

Method of controlling absorption of a filling agent by a fibrous material includes applying a constant excessive concentration of filling agent to the fibrous material; passing the thus-filled fibrous material between a pair of squeeze rollers and simultaneously increasing the bearing pressure of the squeeze rollers to a given optimum value in dependence upon the amount of filling agent absorbed; and, after the optimum bearing pressure is attained, varying the concentration of the filling agent to thereby regulate the absorbed amount; and apparatus for carrying out the foregoing method.



3,737,339

FABRICATION OF PRINTED CIRCUIT BOARDS

Henry Alsberg, Northbrook, and Ronald A. Frederiksen, Schaumburg, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Continuation-in-part of application Ser. No. 812,900, Apr. 2, 1969. This application Dec. 18, 1970, Ser. No. 99,691

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 6 Claims

The invention is directed to a printed circuit board comprising a substrate having a hydrocarbon polymer surface where the hydrocarbon polymer is based upon an elastomeric component of a conjugated diene polymer such as a polybutadiene, and a thermosetting component such as a phenolic, and where a metal coating is directly bonded by additive plating, including electroless deposition, to at least a portion of the hydrocarbon polymer. Such circuit boards are characterized by a superior bond between the metal coating and the hydrocarbon polymer and one preparational method involves metalizing the hydrocarbon polymer either in an uncured or partially cured state, and thereafter completing the cure of the hydrocarbon polymer to produce a bond between the polymer and the metal coating of superior strength.

3,737,340

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE WITH MULTILAYER WIRING STRUCTURE

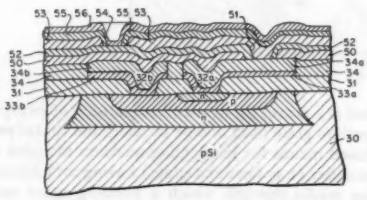
Kazuo Maeda, Kanagawa-ken, and Yasuo Sasaki, Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1970, Ser. No. 100,870

Claims priority, application Japan, Dec. 25, 1969, 44/451,690

Int. Cl. B44d *1/10, 1/18*

U.S. Cl. 117—212 8 Claims



A semiconductor device with multilayer wiring structure can be formed by the use of a mixed film the main constituents of which are a metal oxide and a silicon oxide are used for both wiring and insulation. A wiring layer in a multilayer wiring structure is formed by a conductive layer converted from a mixed film and is buried in the mixed film. The mixed film is formed by the gaseous phase decomposition of a metal complex and a silicon compound within an oxidizing atmosphere.

3,737,341

NOVEL METHOD OF MANUFACTURING PROTECTIVE OXIDE FILMS, AND STRUCTURES EMBODYING SUCH FILMS

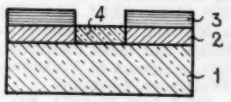
Michel Croset and Noel Nouailles, Paris, France, assignors to SESCOSEM-Societe Europeenne des Semiconducteurs et de Microelectronique

Filed Dec. 29, 1970, Ser. No. 102,382

Claims priority, application France, Jan. 7, 1970, 7000385

Int. Cl. C23f *1/02, 7/02*

U.S. Cl. 117—212 4 Claims



The invention relates to a method of depositing a dielectric film of predetermined shape, upon a semiconductor substrate.

3,737,342

METHOD OF MAKING DARK HEATER COATINGS INCLUDING TUNGSTEN

John J. Decker and Donald R. Kerstetter, Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

No Drawing. Filed July 15, 1971, Ser. No. 163,050

Int. Cl. B44d *1/14*

U.S. Cl. 117—217 2 Claims

Insulating particles of aluminum oxide, zirconium oxide or beryllium oxide are coated with tungsten which in turn is overcoated with platinum to substantially prevent the tungsten from oxidizing and changing color. In addition to platinum, iridium, aluminum oxide or zirconium oxide can be used as the oxidation preventing coating. The tungsten, platinum, or, iridium, aluminum oxide or zirconium oxide are deposited from metallic soaps of the same. A particular example of such a soap is a metal resinate.

3,737,343

TECHNIQUE FOR THE PREPARATION OF ION IMPLANTED TANTALUM-ALUMINUM ALLOY

Harold Basseches and Dieter Gerstenberg, Allentown, and Martin Paul Lepselter, Hanover Township, Pa., Alfred Urquhart MacRae, Berkeley Heights, N.J., and Joel Mark Schoen, Whitehall, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

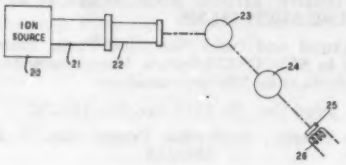
Filed Apr. 19, 1971, Ser. No. 135,178

Int. Cl. B44d *1/50*

U.S. Cl. 117—227 9 Claims

A technique for the preparation of tantalum-aluminum alloy films manifesting resistivities within the range of 10^{-3} to 10^{-2} ohm-centimeters which are stable at temperatures of the order of 400° C. involves depositing tantalum-aluminum alloy films by conventional condensation techniques, implanting nitrogen or oxygen ions in the deposited film and annealing the resultant assembly. The films so produced are the first high resistivity films

to be made available for use in the fabrication of semiconductor devices which are normally subjected to temperatures ranging up to 400° C. during the processing sequence which manifest superior stability characteristics.



3,737,344

PROCESS FOR INCREASING THE ACTIVITY OF POROUS FUEL CELL ELECTRODES

Klaus V. Benda, Kemnat, Horst Binder, Petterweil, Wolfgang Faul, Julich, and Gerd Sandstede, Frankfurt am Main, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

No Drawing. Filed June 3, 1971, Ser. No. 149,767
Claims priority, application Germany, June 4, 1970, P 20 27 482.2
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 FC **10 Claims**

A process for increasing the activity of porous electrodes which contain tungsten carbide having the composition WC_{1-x}, where $0 \leq x \leq 0.2$, and which are used in connection with the anodic oxidation of carbon monoxide, hydrogen or hydrogen-containing fuels in fuel cells that utilize an acid electrolyte. The process involves placing at least one surface of at least one of the untreated tungsten carbide electrode in an alkaline electrolyte containing a reducing agent. A potential of up to +850 mv., measured with relation to a hydrogen electrode in the same electrolyte is applied to the tungsten carbide electrode. The potential is maintained for a period of up to twenty hours. The invention also includes the activated tungsten carbide electrode.

3,737,345

PROTECTED THERMOELECTRIC ELEMENTS AND METHOD OF PROTECTING SAME

Irwin Kudman, Trenton, and Carl Michael Schmelz, Columbus, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,342
Int. Cl. H01v *1/18*
U.S. Cl. 136—238 **6 Claims**

A thermoelectric element, comprising a body of lead telluride and/or lead selenide, is provided with a protective coating of a compound of tellurium and/or selenium and one of the rare earth elements, gadolinium, terbium, dysprosium, holmium, erbium, thulium, or ytterbium. The novel method comprises chemically reacting the heated, unprotected thermoelectric element, in an evacuated environment, with one of the aforementioned rare earth elements to form the protective coating as a refractory reaction product.

3,737,346

SEMICONDUCTOR DEVICE FABRICATION USING COMBINATION OF ENERGY BEAMS FOR MASKING AND IMPURITY DOPING

James Godfrey, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,789
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **4 Claims**

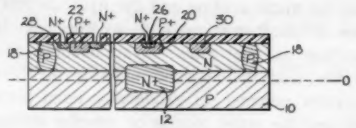
A thin film of a readily volatizable metal, such as cadmium, is formed on the surface of a semiconductor slice. A programmed electron beam forms a masking pattern by volatizing portions of the metal film, for example, defining the emitter windows for a transistor. Without breaking the vacuum ambient an ion implantation introduces the first impurity through the openings in the mask. The electron beam then defines a second mask pattern, enlarging the first openings to define, for example, the base windows, and forming separate new openings, as for diodes and resistors. A second ion implantation puts in a second impurity, again without impairing the original vacuum. These steps are followed by conventional heat treatment for annealing or drive-in of impurities and the device fabrication is completed using conventional metallization techniques and wafer separation.

3,737,347

GRADED IMPURITY PROFILE IN EPITAXIAL FILMS TO IMPROVE INTEGRATED CIRCUIT PERFORMANCE

Graham J. Alcott, Los Gatos, Ian M. Bennett, Palo Alto, and Gerald R. Secrest, Redwood City, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 26, 1970, Ser. No. 14,407
Int. Cl. C23c *13/00;* **H01l** *7/36, 11/00*
U.S. Cl. 148—17.5 **6 Claims**



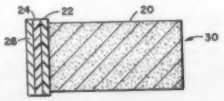
In a monolithic silicon integrated circuit having NPN and substrate PNP transistors therein, a substrate has a layer of intrinsic silicon deposited over its surface prior to and as part of growing an epitaxial region or layer. The intrinsic layer enables a narrow PNP width base and a graded junction to be formed incident to the fabrication of the NPN and PNP.

3,737,348

HEADEND SUSPENSION FOR A CARPET ROLL SOLID PROPELLANT GRAIN

Selford F. Schultz, and James H. Higgins, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1970, Ser. No. 102,313
Int. Cl. C06b *19/00*
U.S. Cl. 149—2 **4 Claims**



Disclosed is a means for headend suspension of a carpet roll solid propellant grain used in high acceleration rocket motors. The disclosed means for headend suspension includes a supporting member (e.g. headend plate) having an intermediate reinforcing media through which a bonding agent securely bonds the carpet roll grain to a headend plate which is then attached to the rocket motor case wherein used.

3,737,349

DETONABLE EXPLOSIVE CONTAINING DISSOLVED FLUORESCER

Michael K. Levenson, 2591 Queenston Road, Cleveland Heights, Ohio 44118

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,819
Int. Cl. C06b *19/00*
U.S. Cl. 149—2 **12 Claims**

To indicate the presence of a leaking or exudating explosive composition, a fluorescer is included in the com-

position which fluoresces when excited as by ultraviolet light. A class of fluorescers has been found that is especially suited for use with detonable explosives for this purpose. Such fluorescers are aromatic-based compounds and especially phenylethynyl-substituted aromatic compounds. These fluorescers are chemically inactive with respect to the explosive composition and substantially oxidation-resistant and stable under conditions of storage for the explosive composition over extended periods of time. The fluorescers, however, must be dissolved in order to fluoresce well when excited. The solvent for the fluorescers is also oxidation-resistant and has a sufficiently low vapor pressure at room temperatures to resist appreciable evaporation so as to maintain the solvency of the fluorescers. The explosive composition may be either powder or liquid, but a liquid form is preferred since the explosive then provides its own solvating action on the fluorescer and an additional liquid for this purpose is not needed.

3,737,350

PREPARING EXPLOSIVE COMPOSITION HAVING PRECIPITATED SALT MIX

Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of application Ser. No. 873,119, Oct. 31, 1969. This application Jan. 31, 1972, Ser. No. 222,354

Int. Cl. C06b *19/00*

U.S. Cl. 149—17 **4 Claims**

A castable blasting agent is provided which remains in a solidified form below a predetermined desired stability temperature. The blasting agent is produced by mixing a heated aqueous solution of an inorganic oxidizing salt maintained at a temperature above the desired predetermined temperature, with particulate explosive additives, e.g. inorganic oxidizing salts, fuels, sensitizers and the like, and cooling the mix to solidify the same in shaped or cast form.

3,737,351

METHOD AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF CHIP BOARD FROM BINDER AND WOOD CHIPS

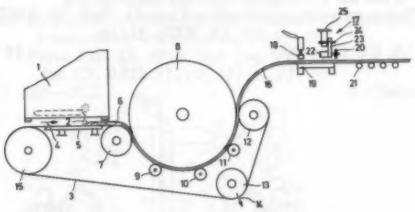
Hubert Ettel, 3371 Teichhutte, Harz Nr. 24, Germany

Filed Dec. 1, 1970, Ser. No. 93,989

Claims priority, application Germany, July 14, 1970, P 20 34 853.2, P 20 34 867.8, P 20 34 868.9

Int. Cl. B29j *5/00*; B32b *21/00*; B29d *7/14*

U.S. Cl. 156—62.2 **10 Claims**



A continuous apparatus for making chip board having a large heated horizontally-disposed drum and an endless metal belt encircling the underside of the drum and spaced from the drum face an accurate predetermined distance which is equivalent to the thickness of the board being produced. The belt is under tension to apply pressure against the mixture of wood chips and binder fed into the space between the belt and the drum. Means is provided spaced from the discharge side of the drum to saw off lengths of board from the continuous web produced, including a clamp to arrest forward motion of the web while the saw is in operation.

3,737,352

REINFORCED PLASTICS MATERIALS

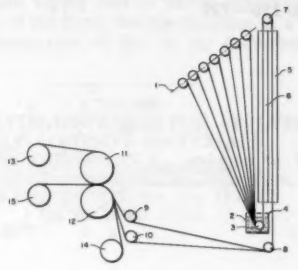
Victor Arthur Avis, Cambridge, and Albert John Matthews, Duxford, England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 25, 1970, Ser. No. 92,786

Claims priority, application Great Britain, Nov. 28, 1969, 58,434/69

Int. Cl. B29h *9/04*

U.S. Cl. 156—181 **11 Claims**



The invention relates to process for producing a resin-impregnated tape from a plurality of tows of fibres which comprises

impregnating the said tows with a solution of a first resin in a volatile solvent,

shaping each tow into the form of a ribbon of substantially constant width,

removing substantially all the solvent from each ribbon,

aligning the impregnated ribbons in an abutting edge-to-edge relationship, and

contacting the upper and lower surfaces of the aligned ribbons with a second resin under conditions such that the said second resin flows about the ribbons to form a coherent resin-impregnated tape therefrom.

3,737,353

METHOD OF PRODUCING RIBBED TUBES OF REINFORCED SETTING PLASTIC MATERIAL

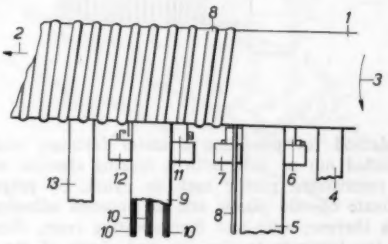
Agnar Gilbu, Sandefjord, Norway, assignor to Vera Fabrikker A/S, Sandefjord, Norway

Filed Feb. 12, 1971, Ser. No. 114,888

Claims priority, application Norway, Feb. 18, 1970, 586/70

Int. Cl. B65h *81/00*

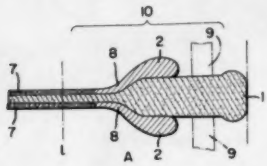
U.S. Cl. 156—190 **3 Claims**



A method of manufacturing externally ribbed tubes and pipes where the ribs are of a resilient material which

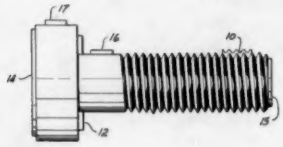
may be compressed by the layers subsequently applied to a mandrel.

3,737,354
PRODUCTION OF SYNTHETIC PAPERS
Takeo Hattori, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
Filed Aug. 14, 1970, Ser. No. 63,802
Claims priority, application Japan, Aug. 28, 1969, 44/67,603
Int. Cl. B29c *29/00;* B32b *5/14*
U.S. Cl. 156—229 4 Claims



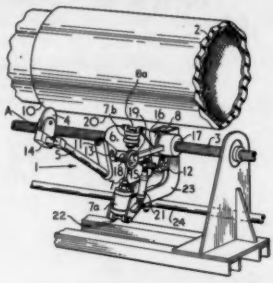
Along the lateral edges of paper-material layers of a thermoplastic resin containing an inorganic filler and prepared to be bonded laminarly on the two surfaces of a base film of a thermoplastic resin to form a laminated structure, respective edge regions not containing any inorganic substances are formed, whereby when the lateral edge parts of the laminated structure are trimmed off after lateral tentering, the edge parts thus cut off contain almost no inorganic substance and, therefore, can be reclaimed and reused as a starting material for the base film.

3,737,355
FASTENER IMPROVEMENT
Michael M. Epstein and Charles W. Cooper, Columbus, Ohio, assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Application Feb. 23, 1966, Ser. No. 524,631, which is a continuation-in-part of application Ser. No. 437,283, Mar. 4, 1965, both now abandoned. Divided and this application Jan. 18, 1971, Ser. No. 107,402
Int. Cl. B32b *15/08, 27/34, 27/38*
U.S. Cl. 156—293 10 Claims



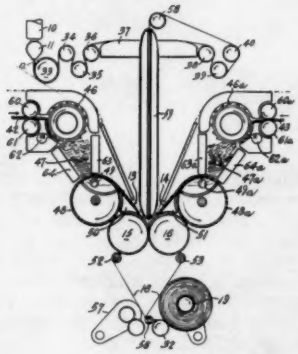
Method for providing a metal fastener, such as a threaded nut or bolt, with a locking element made of an engineering plastic such as nylon, by preparing a laminate of said plastic and an uncured adhesive blend of a thermoplastic and thermosetting resin, dimensioning the laminate to the size and shape of the desired locking element, applying the formed laminate to the fastener with the adhesive layer in contact therewith, and applying heat and pressure to adhere the laminate-locking element to the fastener.

3,737,356
APPARATUS FOR CONSOLIDATING AT LEAST THE BEAD PORTION OF A TIRE CARCASS
John F. Askam, Sutton Coldfield, and Charles Goodwin, Alrewas, both of England, assignors to The Dunlop Company Limited, London, England
Continuation of Ser. No. 711,727, March 8, 1968, abandoned. This application Oct. 28, 1970, Ser. No. 84,879
Claims priority, application Great Britain, Mar. 17, 1967, 12,614/67
Int. Cl. B29h *17/12*
U.S. Cl. 156—402 9 Claims



A tire building machine comprising a rotatable tire building drum and a self-aligning freely rotatable spinning disc for consolidating the plies of a tire mounted on the drum around the bead portion of the tire. Means are provided for moving the mounting for the disc towards and away from the bead portion, for applying pressure thereto and for urging the disc in an arc around the bead portion to incline the disc into predetermined angular dispositions relative to the bead portion. The engagement of the disc with the bead limits the degree of arc rotation of the disc and thus defines the disposition of the plane of rotation of the disc with respect to the bead portion. A second spinning disc for consolidating components between the bead portions may also be provided.

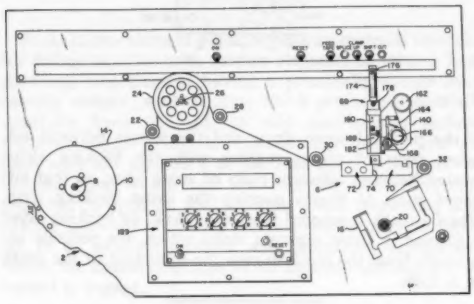
3,737,357
APPARATUS FOR FORMING FIBERTAPES
Emilian J. Bobkowicz and Andre Bobkowicz, both of 1435 St. Alexander St., Room 310, Montreal, Quebec, Canada
Original application May 14, 1968, Ser. No. 729,090, now Patent No. 3,567,545. Divided and this application Feb. 22, 1971, Ser. No. 117,716
Claims priority, application Canada, Sept. 26, 1967, 1,047
Int. Cl. B32b *31/18*
U.S. Cl. 156—495 19 Claims



Apparatus for continuous production of fibertapes, with elimination of subsequent separate slitting operations

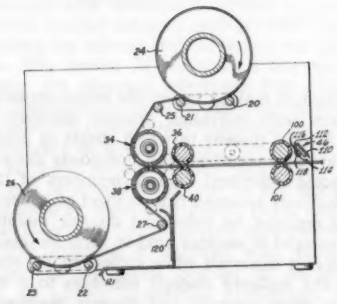
comprising a pair of rotatable pressure rolls with continuous circumferential grooves on their surface, the rolls being so positioned side by side that each male member of the grooved surface of one roll fits into the corresponding female member of the other roll; and a method for producing fibertapes by introducing staple fibers and a polymeric bonding agent between such rotating grooved pressure rolls.

3,737,358
SPLICER HEAD ASSEMBLY FOR USE IN SPLICING TAPE TO LEADERS
James L. King, Sudbury, Mass., assignor to King Instrument Corporation, Waltham, Mass.
Filed May 27, 1971, Ser. No. 147,376
Int. Cl. B31f *5/06;* **B65h** *19/20*
U.S. Cl. 156—502 **17 Claims**



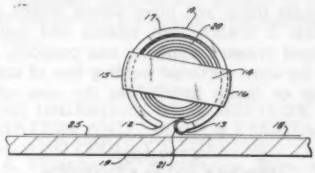
A splicing assembly for cutting and splicing magnetic tape to leaders. The assembly consists of first and second splicing blocks. The first block has two tape-receiving grooves and the second block has one tape-receiving groove. Each groove is adapted to hold a tape in place by suction. The assembly also includes a knife unit operative to sever a tape that extends from one block to the other, and means are provided for moving one block relative to the other so as to selectively align either of the two grooves of the first block with the single groove of the second block. A splicing tape dispenser is used to splice a tape on one block to a tape on the other block.

3,737,359
LAMINATING MACHINE
Maurice D. Levitan, Wilmette, Ill., assignor to Thermal Laminating Corporation, Niles, Ill.
Filed Jan. 25, 1971, Ser. No. 109,100
Int. Cl. B32b *31/10, 31/18, 31/20*
U.S. Cl. 156—522 **9 Claims**



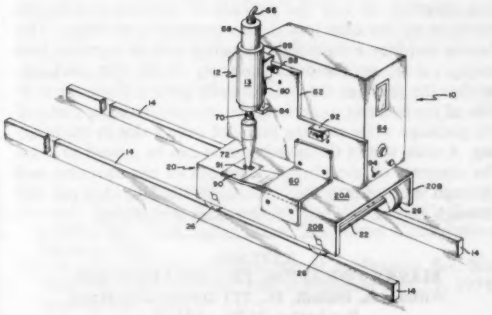
A laminating machine including a pair of cooperating heater roller assemblies and a pair of cooperating pull rolls, which is characterized by the heater roll assemblies comprising a hollow metal tube rotatably supported in a laminating machine and a heater non-rotatably disposed within the hollow tube, with the hollow tube being supported at the ends in planetary bushings. Tear blade means are provided adjacent the pull rolls for severing the protected document from the film supply means, with the tear blade means including a stripper plate for separating the film from the tear blade. The supply rolls of film are each supported on a pair of cross-rods in the laminating machine and tensioning brake means are associated with each supply roll to assure maintenance of proper tension of the films, thereby resulting in a smooth wrinkle-free lamination of film to the document to be protected.

3,737,360
APPLICATOR-DISPENSER FOR APPLYING SELF-ADHESIVE MATERIALS
Harvey S. Horn, Bronx, N.Y., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.
Filed Aug. 19, 1971, Ser. No. 173,167
Int. Cl. B32b *31/20*
U.S. Cl. 156—577 **4 Claims**



A portable device adapted to be operated by hand and in the nature of a dispenser or applicator for applying self-adhesive materials, especially plastic self-adhesives, to a flat surface from a source of supply wherein the self-adhesive plastic material is characterized by a removable paper backing or the like, which is to be stripped away from the self-adhesive plastic at the time of application of such plastic to the surface to be covered thereby.

3,737,361
APPARATUS FOR EXPOSING SHEET MATERIAL TO ULTRASONIC ENERGY
Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Dec. 2, 1971, Ser. No. 204,045
Int. Cl. B06b *3/00*
U.S. Cl. 156—580 **26 Claims**



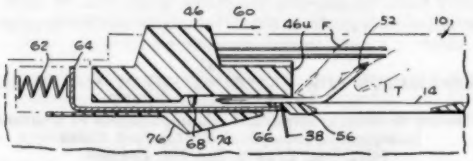
The apparatus disclosed comprises a self-propelled carriage fitted with ultrasonic slitting, welding and/or embossing means and is adapted for translating motion along a set of guide rails. The ultrasonic means include a power

supply and a converter unit with resonating horn opposed by a movable anvil means, the translating motion of the carriage being correlated with the motion of the anvil means. The apparatus is adapted to ultrasonically slit, weld or emboss wide sheet material, for instance slitting sheet material to blanket size, while simultaneously sealing the cut edges as such sheet material is taken from a loom.

3,737,362
PRESSING TOOL FOR FABRICATING WELDED BRANCHED PIPE CONNECTIONS FROM WELDABLE THERMOPLASTIC MATERIALS
Erich Plontke, Riehen, Switzerland, assignor to Rohren-Keller A.G., Basel, Switzerland
Application Oct. 23, 1969, Ser. No. 868,833, now Patent No. 3,576,325, which is a continuation-in-part of abandoned application Ser. No. 628,639, Apr. 5, 1967. Divided and this application June 17, 1971, Ser. No. 154,036
Claims priority, application Switzerland, Apr. 15, 1966, 5,520/66
Int. Cl. B32b *31/00*
U.S. Cl. 156—580 **3 Claims**

A press tool for use in fabricating welded branched pipe connections from weldable thermoplastic materials which includes outer and inner sleeve means spaced to accommodate a branch pipe section and such sleeves having shaped pressure applying end portions, operative to deform the cross sectional welding line of contact into a raised lip or hump to increase the area of welding contact.

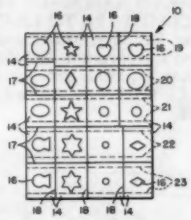
3,737,363
DENTAL FILM STRIPPER
Gunter Schmidt, Marina Del Rey, Calif., assignor to Productron, Inc., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 732,186, May 27, 1968, now Patent No. 3,559,554. This application Aug. 15, 1969, Ser. No. 850,477
Int. Cl. B32b *31/16;* **G03d** *3/08*
U.S. Cl. 156—584 **11 Claims**



A stripping device for use with a dental film package that includes a film chip contained within an outer protective covering, to strip the package in daylight and enable insertion of the chip into a film processing machine. The device includes a light-tight housing with a member that engages a tab on the outer covering of the film package, so that the package can be manually pulled along the outside of the housing to peel off the covering from one end of the package while moving that end over a slot in the housing. A slide within the housing then can be moved to draw the contents of the film package out of the covering and through the slot into the housing, so the film chip can fall through an exit and into the developing machine.

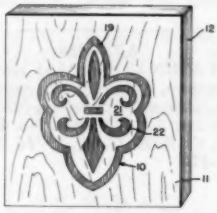
3,737,364
MASKS FOR SLIDE TRANSPARENCIES
William A. Heindl, Jr., 171 Ralmerston Road, Rochester, N.Y. 14618
Filed Sept. 15, 1971, Ser. No. 180,723
Int. Cl. B32b *3/10, 3/16*
U.S. Cl. 161—36 **6 claims**

A plurality of foil masks have pressure-sensitive adhesive surfaces releasably secured to a cardboard backing to hold the masks in intersecting rows and columns on the backing. Each mask has a central opening surrounding a similarly shaped-foil cut-out, which is removed from the opening when the mask is applied to a slide. The backing is cut along spaced pairs of parallel score lines that divide the backing into separate strips extending parallel to the rows of masks. The openings in each row of masks register with a backing strip formed between one



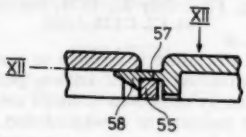
of the pairs of score lines; and the spaces between adjacent rows of masks register with the backing strips located between adjacent pairs of score lines, so that adjacent rows of masks overlap the same backing strip. When a mask is severed from the blank, its backing layer is formed in three separate strips which are peelable selectively from the mask to ease the mounting of the mask on a slide.

3,737,365
METHOD OF MAKING COMPOSITE INLAY DESIGNS AND PRODUCTS
Joe M. Smith, High Point, N.C., assignor of a fractional part interest to Joseph P. Rawley, High Point, N.C.
Continuation of abandoned application Ser. No. 780,333, Dec. 2, 1968. This application Mar. 15, 1971, Ser. No. 124,446
Int. Cl. B29c *17/00;* **B32b** *1/04, 31/00*
U.S. Cl. 161—41 **9 Claims**



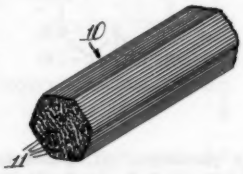
A method of making composite inlaid designs in plane sheet form with individual discrete members and the product formed thereby in which sheets of different materials having a predetermined composite design are cut with selected individual discrete members of the design being selectively removed from a sheet of material of one type and replaced by individual discrete members from a sheet material of another kind to form an inlaid pattern from different materials while subjecting the sheet material and the replaced discrete members to a suction to retain the sheet material and discrete members in situ after which a removable sheet may be applied adhesively to retain the composite design together in sheet form.

3,737,366
SHEET-LIKE ELEMENT MADE OF PLASTICS MATERIAL
Fritz Mader, Oberdorf, Switzerland, assignor to Matom AG., Niederdorf, Basel-Campagne, Switzerland
Filed Oct. 27, 1971, Ser. No. 192,965
Claims priority, application Switzerland, Oct. 27, 1970, 15,901/70
Int. Cl. B32b *3/06, 7/08*
U.S. Cl. 161—48 **8 Claims**



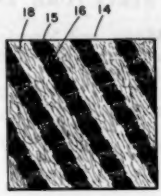
A sheet-like element made of plastics material intended for fitting together with further elements to form a floor covering, said element having a practically square load-bearing surface, wall sections which project substantially vertically from one side of said load-bearing surface, serve as supports for the load-bearing surface and are flush with the periphery of the load-bearing surface, bar sections lying within said wall sections, connecting flaps provided on opposite wall sections, which connecting flaps project outward from the load-bearing surface for joining to an adjacent element, and connecting devices into which the connecting flaps of an adjacent element are intended to engage.

3,737,367
PASSAGE STRUCTURE
John A. Roberts, North Chelmsford, and Peter R. Roberts, Groton, Mass., assignors to Brunswick Corporation, Skokie, Ill.
Original application Nov. 25, 1968, Ser. No. 778,679, now Patent No. 3,506,885, dated Apr. 14, 1970. Divided and this application Jan. 19, 1970, Ser. No. 3,931
Int. Cl. B32b *3/10*
U.S. Cl. 161—109 **8 Claims**



A collimated hole structure is formed by constricting a plurality of tubular elements each provided with a core for supporting the tubular element during the constricting operation. The bundle of elements is constricted to a point where the elements effectively fuse into a substantially monolithic body. The cores are then removed, leaving a plurality of extremely small diameter, generally parallel passages in a solid body. The tubular elements may be arranged in any desired array, and thus the passages may be provided similarly in any desired array. The passages may have high aspect ratios and may be closely juxtaposed. In one illustrative application, the collimated hole structure is provided with dielectric film and utilized as an anode portion of an electrolytic capacitor. In another illustrative application, the collimated hole structure is utilized as a tip for a drilling device.

3,737,368
NONWOVEN WIPING CLOTH
John J. Such, Wrenthan, and Arthur R. Olson, Walpole, both of Mass., assignors to The Kendall Company, Boston, Mass.
Filed Dec. 10, 1971, Ser. No. 206,802
Int. Cl. B32b *3/00*
U.S. Cl. 161—123 **3 Claims**



A launderable nonwoven wiring cloth is formed by bonding, with heat and pressure, an intermingled array of cotton fibers, rayon fibers, and thermoplastic binder fibers, in a set of discrete and spaced-apart quadrilateral areas, the bonded areas forming a modulated diagonal line inclined at an angle of between 30° and 60° to a line normal to the machine direction axis of the fabric.

3,737,369
ALKALINE DIGESTION OF A MIXTURE OF COTTON LINTERS AND FIBROUS VEGETABLE MATERIAL AND PRODUCT THEREOF
Eduardo J. Villavicencio, Paramonga, Peru, assignor to Process Evaluation and Development Corporation, New York, N.Y.
No Drawing. Filed Mar. 13, 1972, Ser. No. 234,362
Int. Cl. D21c *5/00*
U.S. Cl. 162—95 **10 Claims**

Alkaline digestion of a mixture of cotton linters, having a fiber length of about 2 to about 5 millimeters, and fibrous vegetable material.

3,737,370
PROCESS FOR MAKING PAPER AND PAPER MADE THEREFROM USING LIQUID CATIONIC STARCH DERIVATIVES
Wadym Jarowenko, Plainfield, and Morton W. Rutenberg, North Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 15,199, Feb. 27, 1970, now Patent No. 3,666,751, which is a continuation-in-part of abandoned application Ser. No. 811,649, Mar. 28, 1969. This application Mar. 6, 1972, Ser. No. 232,237
Int. Cl. D21h *3/28*
U.S. Cl. 162—175 **8 Claims**

Novel liquid cationic starch derivatives prepared by reaction of starch with epichlorohydrin-ammonium hydroxide condensates are useful as additives in the manufacture of paper wherein they increase the retention of inorganic pigments by the cellulose pulp and strengthen the resulting paper.

3,737,371
HIGH OPACITY PAPER
Seward M. Bazler, Cincinnati, and William C. Lane, Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio
No Drawing. Continuation-in-part of application Ser. No. 738,133, June 19, 1968. This application July 29, 1970, Ser. No. 59,327
Int. Cl. D21h *3/66*
U.S. Cl. 162—181 B **9 Claims**

A titanium dioxide filled paper with an added crystalline colloid for improved light scattering efficiency. The crystalline colloidal material is selected from the class con-

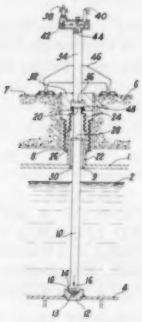
sisting of hydrous aluminum oxide and hydrous magnesium silicate having an average volume equivalent to a sphere with a diameter ranging between about 10–30 millimicrons. The improved scattering efficiency increases the opacity of the sheet and makes it especially adapted for use as a print sheet in a decorative plastic laminate.

3,737,372

INSTALLATION FOR SURVEYING THE DISPLACEMENT OF A STRUCTURE IN A NUCLEAR REACTOR

Philippe Debergh, Massy, and Maurice Lagrange, Paris, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 31, 1971, Ser. No. 129,670
Claims priority, application France, Apr. 10, 1970, 7013099
Int. Cl. G21c *17/00*
U.S. Cl. 176—19 R 8 Claims



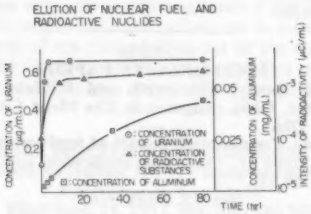
The installation comprises a closed tube, one end of which contains a sighting gage and is supported by the structure to be surveyed whilst the other end of the tube which is closed by a viewing window is centered and maintained elastically within an opening of a stationary component. An observation tube is fixed in the opening of the stationary component and connects an object lens placed directly above the viewing window to an optical system.

3,737,373

METHOD OF DECONTAMINATING HEAVY WATER COOLED AND MODERATED REACTOR

Kenji Motojima and Hiroshi Sakurai, Mito, and Hiroshi Onishi, Yasuichi Sasaki, Mitsuru Koike, and Kaoru Ueno, Ibaragi-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,548
Claims priority, application Japan, July 2, 1970, 45/57,260
Int. Cl. G21f *9/00*
U.S. Cl. 176—37 6 Claims


ELUTION OF NUCLEAR FUEL AND RADIOACTIVE NUCLIDES
CONCENTRATION OF URANIUM (μg/ml)
CONCENTRATION OF ALUMINUM (mg/ml)
INTENSITY OF RADIOACTIVITY (μCi/ml)
B: CONCENTRATION OF URANIUM
A: CONCENTRATION OF RADIOACTIVE SUBSTANCES
B: CONCENTRATION OF ALUMINUM
TIME (hr)

A heavy water cooled and moderated reactor, its nuclear fuel assemblies, attached pipings and container can advantageously be decontaminated by employing a heavy water solution of deuterated oxalic acid. The radioactive substances, reactor materials, and/or nuclear fuels eluted in the solution are removed by decomposing the deuterated oxalic acid by means of an ionizing radiation.

3,737,374

TREATMENT OF PULP MILL WASTES

Arthur M. Stern, Highland Park, N.J., and Lawrence L. Gasner, Cornwells Heights, Pa., assignors of a fractional part interest to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed July 22, 1971, Ser. No. 165,351
Int. Cl. C12b *1/00*
U.S. Cl. 195—9 7 Claims

The present disclosure is directed to a method with a two-fold objective. As is well known, pulp mill wastes which are primarily composed of lignin are dark in color and extremely resistant to biodegradation. Accordingly, the discharge of these wastes to any natural waterways is limited by legislation. The present invention provides a method for improving the color characteristics of the waste and for utilizing the product or material obtained thereby to produce valuable and utilizable materials or chemicals. Basically, the method entails contacting an oxidatively treated waste and, more specifically, an oxidatively treated waste lignin with a microbial population for a time and at conditions necessary to convert said oxidatively treated lignin to the utilizable end products. Examples of utilizable products which can be obtained in this manner are organic acids, biopolymers, proteins, antibiotics, steroids, vitamins, fertilizers, etc.

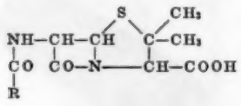
3,737,375

PROCESS FOR THE PRODUCTION OF 6-AMINOPENICILLANIC ACID

Ernst Brandl, Walter Kleiber, and Franz Knauseder, Tirol, Austria, assignors to BIOCHEMIE Gesellschaft m.b.H., Vienna, Austria

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,955
Claims priority, application Austria, Nov. 28, 1969, 11,148/69
Int. Cl. C12d *9/00*
U.S. Cl. 195—36 P 7 Claims

The invention concerns a novel cleavage process for the production of 6-aminopenicillanic acid, which comprises contacting a penicillin of the formula:



wherein R is phenoxymethyl, p-cresoxymethyl or n-butoxymethyl, or an alkali metal salt of said pencillin, with penicillin amidase produced by culturing under aerobic conditions *Bovista plumbea* (NRRL 3501) or a mutant or variant thereof in an aqueous medium containing assimilable sources of carbon and nitrogen.

3,737,376

NON-DUSTING AND MOISTURE-RESISTANT ENZYME COMPOSITIONS

Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,416
Int. Cl. C12k *1/00*
U.S. Cl. 195—63 11 Claims

Enzyme compositions of the type used in washing, namely, bacterial protease, bacterial amylase and mixtures thereof are prepared in the form of a dry-appearing, essentially non-dusting, flowable enzyme powder, free of gummy, sticky and lumpy characteristics and resistant to moisture.

3,737,377
PURIFICATION OF LACTASE

Moshe Sternberg, South Bend, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,316
Int. Cl. C07g 7/02
U.S. Cl. 195—66 R 7 Claims

Lactase can be isolated and separated from impurities by mixing a lactase-containing solution with a polyacrylic acid to form a precipitate with the lactase. The resulting precipitate is then separated from the remaining solution. Useful polyacrylic acids have a molecular weight of at least about one million.

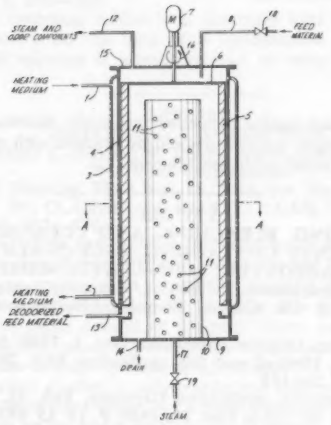
ERRATUM

For Class 195—62 see:
Patent No. 3,737,383

3,737,378
DEODORIZING METHOD BY FILM AND STEAM DISTILLATION

Akira Mori and Yozi Nagata, Wakayama-shi, and Hiromi Nakagawa, Naka-gun, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1970, Ser. No. 5,522
Claims priority, application Japan, Feb. 1, 1969, 44/7,753
Int. Cl. B01d 3/28, 3/38
U.S. Cl. 203—89 4 Claims



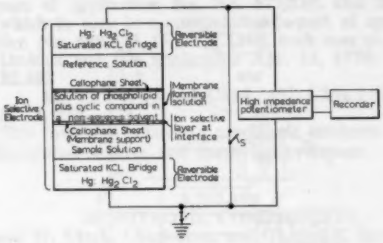
A liquid feed material is deodorized by flowing same downwardly in the form of a thin film and blowing steam against the film to remove odor components therefrom. The steam is supplied so that substantially the entire surface of the film is contacted over substantially its entire length with freshly supplied steam.

3,737,379
INSTANTANEOUS MEASUREMENT OF POTASSIUM AND OTHER SPECIFIC ION ACTIVITIES

Daniel C. Tosteson, Chapel Hill, N.C., assignor to Duke University, Inc., Durham, N.C.

Original application Dec. 20, 1967, Ser. No. 692,065. Divided and this application Apr. 28, 1971, Ser. No. 138,220
Int. Cl. G01n 27/30, 27/40
U.S. Cl. 204—1 T 4 Claims

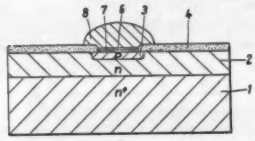
The direct and very rapid measurement of the activity of a particular chemical species of ion in an aqueous solution is achieved with an ion selective electrode embodying as the selective element a mechanically stable layer established between the aqueous solution and a non-aqueous phase, said layer being established by a surface active agent such as phospholipid, said layer also containing an ion selective macrocyclic compound such as valinomycin and said agent and macrocyclic compound being dissolved in a solvent which forms the non-aqueous phase. High selectivity for potassium ions, in particular, is achieved.



3,737,380
PROCESS FOR CONTACTING A SEMICONDUCTOR DEVICE

Alfred Bachmeier, Schwaigern, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Original application July 28, 1967, Ser. No. 656,927. Divided and this application Dec. 15, 1969, Ser. No. 885,337
Claims priority, application Germany, Aug. 30, 1966, T 31,914
Int. Cl. C23b 5/48
U.S. Cl. 204—15 5 Claims



A semiconductor region bounded by a window of a diffusion-inhibiting layer is provided with a vapor-deposited nickel layer, then a vapor-deposited silver layer, and finally with a silver boss galvanically deposited onto the silver layer and overlapping the diffusion-inhibiting layer.

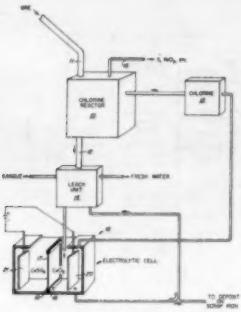
3,737,381
APPARATUS FOR TREATING COPPER ORES

Merwin G. White and Donald M. White, Salt Lake City, Utah, assignors to Mutual Mining and Refining, Ltd., Vancouver, British Columbia, Canada

Original application Dec. 18, 1967, Ser. No. 691,630, now Patent No. 3,537,961, dated Nov. 3, 1970. Divided and this application July 2, 1970, Ser. No. 60,958
Int. Cl. B01k 3/10; C22d 1/08
U.S. Cl. 204—263 1 Claim

Copper bearing ore is chlorinated in a closed combustion furnace at between 350° C. and 600° C. to volatilize the sulfur and iron constitutents and to yield a water soluble copper chloride residue. The residue is leached with water and the copper chloride goes into solution. The solution is placed as an anolyte in an electrolytic cell that is divided by a cationic exchange membrane having

copper sulfate as a catholyte, and copper is plated out at the cathode. The chloride decomposes to chlorine and



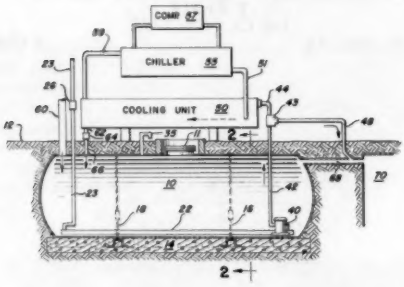
is expelled at the anode, from where it can be recovered and recycled.

3,737,382

REFRIGERATED SURGE TANK FOR USE WITH AEROBIC SEWAGE DIGESTION SYSTEM

Richard J. Fletcher, 409 E. Franklin, Apt. 5, and Robert I. Fletcher, 620 Highwood Ave., both of Greencastle, Ind. 46135

Filed Sept. 27, 1971, Ser. No. 183,874
Int. Cl. C02b *1/12*; C02c *1/02*
U.S. Cl. 210—12 **17 Claims**



A refrigerated surge tank is used to hold sewage at a reduced temperature and provide an aerobic digestion system with a regulated sewage feed without substantial loss of bio-nutrients or the generation of offensive odors while the sewage is being held. Preferably the surge tank is also provided with means for oxygenating the sewage being held.

3,737,383

PROCESS FOR PRODUCTION OF ENZYME ALKALINE DEXTRANASE

Jinnosuke Abe, Tagata-gun, Tetsuo Watanabe, Yokohama-shi, and Tsutomu Yamaguchi and Sinobu Gocho, Tagata-gun, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Ohito-cho, Tagata-gun, Shizuoka-ken, Japan

Filed Feb. 22, 1971, Ser. No. 117,623
Claims priority, application Japan, Feb. 20, 1970, 45/15,057
Int. Cl. C12d *13/10*
U.S. Cl. 195—62 **5 Claims**

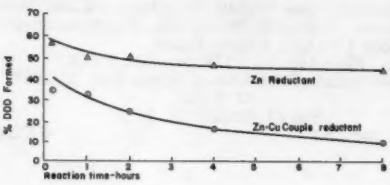
A process for the production of enzyme alkaline dextranase, in which a microorganism of *Brevibacterium fuscum* var. *dextranlyticum* is cultivated in a culture medium containing a source of assimilable carbon and nitrogen, and the enzyme produced is then separated from the cultured medium. The enzyme alkaline dextranase thus produced is characterized by good stability and activity. A new microorganism is useful in this process, namely, *Brevibacterium fuscum* var. *dextranlyticum* NRRL B-3852 of the Northern Utilization Research and Development Division of the U.S. Department of Agriculture.

3,737,384

DECOMPOSITION OF HALOGENATED ORGANIC COMPOUNDS USING METALLIC COUPLES

Keith H. Sweeny, West Covina, and James R. Fischer, Claremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 23, 1970, Ser. No. 100,975
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 **7 Claims**



Halogenated organic compounds, especially chlorinated organic pesticides, are decomposed by reaction with metallic couples in a mildly acidic environment.

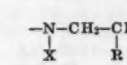
3,737,385

WASHING, BLEACHING AND CLEANSING AGENTS CONTAINING POLY-(N-ALKYL-DICARBOXYLIC ACID)-ALKYLENEIMINES

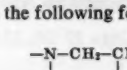
Achim Werdehausen, Monheim, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Original application Dec. 1, 1969, Ser. No. 881,306. Divided and this application Mar. 20, 1972, Ser. No. 236,158
Claims priority, application Germany, Feb. 21, 1969, P 19 08 728.6; Mar. 27, 1969, P 19 15 652.6
Int. Cl. C11d *7/54*
U.S. Cl. 252—102 **9 Claims**

A washing, bleaching and cleansing agent having a content of from 50% to 99.9%, by weight, of customary components of washing, bleaching and cleansing agents and from 0.1% to 50%, by weight, of salts of poly-(N-alkyldicarboxylic acid)-alkyleneimines having an average molecular weight of from 500 to 500,000 in which at least one-third of the recurring substituted alkyleneimine groups have the following formula

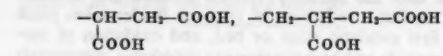


and the remainder of the recurring substituted alkyleneimine groups have the following formula

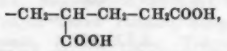


wherein, in both formulas, R represents a member selected

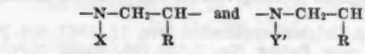
from the group consisting of hydrogen and methyl, X represents



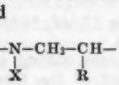
and/or



and Y represents a member selected from the group consisting of hydrogen,



and Y' represents a member selected from the group consisting of hydrogen and



3,737,386
SOLVENT BASED DETERGENT

Richard Geiss, 8875 Lusshof, Offingen (Danube), Germany, and Rolf Quarch, St. Johannisstrasse 37, Weissenhorn, Germany

No Drawing. Filed Aug. 4, 1970, Ser. No. 60,924
Int. Cl. C09d *9/04;* **C11d** *7/22, 7/50*
U.S. Cl. 252—162 **12 Claims**

The invention relates to a detergent used particularly in industry on the base of a combination of different organic solvents in admixture with cleaning intensifiers.

3,737,387
DETERGENT COMPOSITION

Walter L. Marple, St. Joseph, Mich., assignor to Whirlpool Corporation

No Drawing. Filed June 15, 1970, Ser. No. 46,278
Int. Cl. C09d *9/04;* **C11d** *7/52;* **C23g** *5/02*
U.S. Cl. 252—170 **15 Claims**

A detergent composition that may be in the form of either a liquid, a powder or a semi-solid and which when added to water forms a washing solution that can be used in removing efficiently complex fats from fabrics made of either natural or synthetic fibers, the detergent composition consisting essentially of an emulsifier that is neither a polyoxyethylene alkylphenol, a polyoxyethylene alkyl alcohol, a polyoxyethylene ester of fatty acid or a polyalkylene oxide block copolymer containing both ethylene oxide and propylene oxide chains, and an organic solvent for the complex fats. The resulting washing solution made by adding the detergent composition to water is a three phase system having an aqueous phase, a dissolved emulsifier phase and a dispersed non-aqueous solvent phase.

3,737,388
AZEOTROPIC COMPOSITION

Jared W. Clark, Charleston, and Charles E. Rectenwald, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Oct. 30, 1968, Ser. No. 772,046, now Patent No. 3,527,708, which is a continuation-in-part of application Ser. No. 677,738, Oct. 24, 1967, which in turn is a continuation-in-part of application Ser. No. 590,227, Oct. 28, 1966, both now abandoned. Divided and this application Apr. 13, 1970, Ser. No. 32,481
Int. Cl. C09d *9/00;* **C11d** *7/52;* **C23g** *5/02*
U.S. Cl. 252—171 **2 Claims**

This invention relates to azeotropic mixtures of tetrachlorodifluoroethane and normal propanol.

3,737,389
AZEOTROPIC COMPOSITION

Jared W. Clark, Charleston, and Charles E. Rectenwald, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Oct. 30, 1968, Ser. No. 772,046, now Patent No. 3,527,708, which is a continuation-in-part of application Ser. No. 677,738, Oct. 24, 1967, which in turn is a continuation-in-part of application Ser. No. 590,227, Oct. 28, 1966, both now abandoned. Divided and this application Apr. 13, 1970, Ser. No. 32,482
Int. Cl. C09d *9/00;* **C11d** *7/52;* **C23g** *5/02*
U.S. Cl. 252—171 **2 Claims**

This invention relates to azeotropic mixtures of tetrachlorodifluoroethane and methylpropylketone.

3,737,390
AZEOTROPIC COMPOSITION

Jared W. Clark, Charleston, and Charles E. Rectenwald, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Oct. 30, 1968, Ser. No. 772,046, now Patent No. 3,527,708, which is a continuation-in-part of application Ser. No. 677,738, Oct. 24, 1967, which in turn is a continuation-in-part of application Ser. No. 590,227, Oct. 28, 1966, both now abandoned. Divided and this application Apr. 13, 1970, Ser. No. 32,483
Int. Cl. C09d *9/00;* **C11d** *7/52;* **C23g** *5/02*
U.S. Cl. 252—171 **2 Claims**

This invention relates to azeotropic mixtures of tetrachlorodifluoroethane and methyl ethyl ketone.

3,737,391
POLYETHERS AND POLYURETHANES

Joseph Feltzin, Wilmington, Del., and Nadji Y. Tehrani, Stamford, Conn., assignors to ICI America Inc.

No Drawing. Original application May 15, 1967, Ser. No. 638,630. Divided and this application Feb. 25, 1971, Ser. No. 119,017
Int. Cl. C08g *22/26*
U.S. Cl. 252—182 **7 Claims**

Polyurethanes having improved properties are prepared by reacting polyoxyalkylene ether diols containing a carboxycyclic or oxacyclic ring and from 2 to 10 oxyalkylene groups, polyoxyalkylene ether polyols containing from 5 to 10 hydroxyl groups and from 15 to 90 oxyalkylene groups, and organic polyisocyanates.

3,737,392
SOLVENT COMPOSITION USEFUL IN ACID GAS REMOVAL FROM GAS MIXTURES

Jamiel Ameen and Seymour A. Furbush, Hopewell, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Original application June 11, 1969, Ser. No. 832,368. Divided and this application Jan. 6, 1971, Ser. No. 104,462
Int. Cl. B01f *1/00*
U.S. Cl. 252—364 **4 Claims**

An improved solvent and process for treating and separating acid gas, particularly hydrogen sulfide from gas mixtures containing the same, such as natural gas mixtures containing hydrogen sulfide, carbon dioxide and methane. The process involves the use of a solvent comprising a mixture of dimethyl ethers of polyethylene glycols of the formula $CH_3O(C_2H_4O)_xCH_3$, wherein x is 3–9, to absorb the hydrogen sulfide and part of the carbon dioxide under superatmospheric pressure. The solvent containing dissolved hydrogen sulfide and carbon dioxide is flashed at reduced pressure to remove most of the carbon dioxide and produce a "semilean" solvent. Part of the semilean solvent is recycled to an intermediate part of the absorber; the remaining semilean solvent containing hydrogen sulfide is subjected to an oxygen-containing gas under conditions that result in complete removal of the hydrogen sulfide to produce a "lean" solvent. The

lean solvent is recycled to the top of the absorber. By the use of two solvent feeds to the absorber, the economy of the process is improved.

3,737,393

PROCESS FOR THE PREPARATION OF A DIALKYL MAGNESIUM COMPOUND

Menno de Vries, Sittard, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed June 3, 1970, Ser. No. 43,238
Claims priority, application Netherlands, June 4, 1969, 6908526
Int. Cl. C07f 3/02
U.S. Cl. 252—431 R 10 Claims

A process for preparing solutions of dialkyl magnesium compounds is disclosed, wherein an alkyl halogenide is reacted with magnesium, and the reaction product is contacted with an organo-aluminum compound during and/or after the reaction to form a solution of dialkyl magnesiuum and aluminum compound. Such solutions are useful in the polymerization of α-alkylenes, such as ethylene, for instance.

3,737,394

CATALYTIC PROCESS FOR UNSATURATED ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application June 27, 1969, Ser. No. 837,356. Divided and this application Apr. 5, 1971, Ser. No. 131,502
Int. Cl. B01j 11/82
U.S. Cl. 252—435 4 Claims

Unsaturated acids in high yields along with smaller yields of aldehydes, as acrylic acid and acrolein or methacrylic acid and methacrolein, are prepared in excellent yields by the oxidation of an olefin as propylene or isobutylene in the presence of a catalyst containing cobalt molybdate, tellurium oxide and phosphorus oxide.

3,737,395

PREPARATION OF CARBON SUPPORTED PROMOTED NOBLE METAL CATALYSTS

Melvin R. Arnold, Knoxville, Tenn., and Albert Schrage, East Orange, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,943
Int. Cl. B01j 11/06
U.S. Cl. 252—447 6 Claims

Carbon supported promoted noble metal catalysts having increased activity may be prepared by adding a basic compound to a slurry of a soluble noble metal compound, a soluble metallic promoter at a high valency state and particulate carbon to deposit a noble metal compound and a high valency metallic promoter onto the particulate carbon and then co-reducing the noble metal compound to a metallic form and the high valency metallic promoter to a low valency metallic promoter.

3,737,396

CATALYST FOR TREATING COMBUSTION EXHAUST GAS

John S. Negra, South Plainfield, John F. Tourtellotte, Westfield, and Abe Warshaw, Matawan, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,108
Int. Cl. B01j 11/08, 11/32
U.S. Cl. 252—466 J 3 Claims

The exhaust gas discharged from internal combustion engines or the like is treated to convert harmful or noxious pollutant components such as nitrogen oxides, carbon monoxide and unburned hydrocarbons to innocuous compounds, by contacting the exhaust gas with two stages in series of a catalyst composition containing 5.0 to 12.0% by weight of copper as equivalent copper oxide and 0.5 to 4.0% by weight of cobalt as equivalent cobalt oxide, deposited on particles of alpha alumina. The catalyst may also contain a small proportion of manganese. Air is injected into the partially reacted exhaust gas between stages, so that a reduction of nitrogen oxides takes place in the first catalytic stage or bed, and oxidation of carbon monoxide and hydrocarbons to innocuous compounds such as carbon dioxide and water vapor takes place in the second catalytic stage or bed.

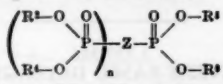
3,737,397

ESTERS OF PHOSPHONIC ACID AS FIRE-RETARDANTS IN POLYURETHANE FOAMS

Charles F. Baranauckas and Irving Gordon, Niagara Falls, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Original application Dec. 11, 1963, Ser. No. 329,858, now Patent No. 3,538,196, dated Nov. 3, 1970. Divided and this application June 19, 1970, Ser. No. 59,804
Int. Cl. C08g 22/44, 51/58; C09k 3/28
U.S. Cl. 260—2.5 AJ 3 Claims

A polyurethane foam having incorporated therein a phosphorus compound of the formula



wherein Z is selected from the group consisting of alkyl, alkylene, alkenyl, aryl substituted alkyl, aryl alkyl substituted aryl, nitro alkyl, halogen substituted aryl, heterocyclic, hydroxy substituted alkyl, hydroxy substituted alkylene, halogen substituted alkylene, halogen substituted alkyl, hydroxy substituted aryl, hydroxyl aryl substituted alkyl, hydroxy alkyl substituted aryl, hydroxy alkyl substituted heterocyclic, hydroxy alkoxy alkyl, hydroxy polyalkoxy alkyl and mixtures thereof, R^3, R^4, R^5 and R^6 are selected from the group consisting of alkyl, alkyl substituted aryl, aryl substituted alkyl, nitro alkyl, halogen substituted aryl, halogen substituted alkyl, hydroxy alkyl, alkoxy alkyl, hydroxy alkoxyalkyl, alkenyl substituted alkenyl, hydroxy polyalkoxy alkyl, and mixtures thereof, and n is 0 to 5.

3,737,398

METHOD OF MAKING A POLYVINYL ACETAL SPONGE BUFF

Daizo Yamaguchi, Ketsuzen-cho 1–4, Nishinomiya, Japan

No Drawing. Filed Nov. 4, 1970, Ser. No. 87,013
Claims priority, application Japan, Nov. 13, 1969, 44/90,429
Int. Cl. C08f 27/20, 29/26, 47/08
U.S. Cl. 260—2.5 F 13 Claims

A sponge buff suitable for use in polishing or finishing surfaces of stainless steels, aluminum and other metals is made by reacting polyvinyl alcohol with a lower aldehyde selected from the group consisting of formaldehyde, acetaldehyde and butyraldehyde, and dialdehyde starch at a pH of at least 1 in the presence of an acidic catalyst, suitable foaming agent and 20–70% by weight based on the reaction mixture of heat resistant fibers, and forming the reaction produced in any desired form.

3,737,399

POLYMER FOAMS

John Michael Locke, Minstead, and David Porter, Southampton, England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

No Drawing. Filed Feb. 14, 1972, Ser. No. 225,990
Claims priority, application Great Britain, Feb. 19, 1971, 4,991/71
Int. Cl. C08j 1/18; C08f 47/08
U.S. Cl. 260—2.5 L 30 Claims

A process for the preparation of a solid foamed polymer from a hydrogen-peroxide-modified polymer dispersion comprising foaming the dispersion and drying the

foamed dispersion during or after cross-linking thereof characterized in that hydrazine is added to the dispersion prior to or during the foaming thereof.

3,737,400

SELF-EXTINGUISHABLE POLYURETHANE FOAM

Sadao Kumasaka, Suginami-ku, Tokyo; Satomi Suzuki, Nerima-ku, Tokyo; Takeo Yoshino, Edogawa-ku, Tokyo; Takashi Ibayashi, Kitatama-gun, Tokyo, and Tutomu Kobayashi, Shinjuku-ku, Tokyo, all of Japan, assignors to Toyo Rubber Chemical Industrial Corp., Tokyo, Japan

Continuation-in-part of Ser. No. 21,223, March 19, 1970,. This application Mar. 24, 1972, Ser. No. 237,887

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AJ 8 Claims

A self-extinguishable polyurethane foam loaded with a flame-suppressing agent. This agent is prepared of either one member selected from the group consisting of $(NH_4)_2SO_4$, $Al(OH)_3nH_2O$ and a mixture thereof, or a combination of said one member with at least one member selected from the group consisting of KCl, K_2SO_4, K_2O, KNO_3, $Ca(OH)_2$, $Mg(OH)_2$ and $Ba(OH)_2$.

3,737,401

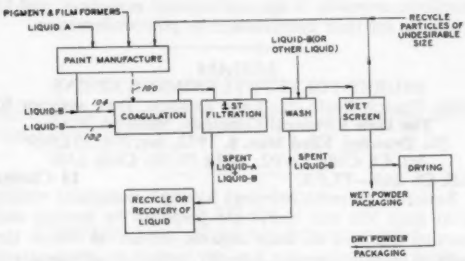
METHOD OF MAKING POWDER PAINT

Ivan H. Tsou, Pontiac, and James W. Garner, Detroit, Mich., assignors to Grow Chemical Corp., New York, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,695

Int. Cl. C08f *47/03*

U.S. Cl. 260—23 R 25 Claims



A method of making powder paint is disclosed wherein there is blended with a coagulating liquid, at a rate inversely proportional to the desired particle size of the powder paint, a liquid paint having its solvent portion miscible with the coagulating liquid and its film-forming portion insoluble in the coagulating liquid, to precipitate the paint in powder form, and removing thus precipitated powder paint from the blend.

3,737,402

FLATTING AGENTS, FLATTING COMPOSITIONS AND METHOD FOR THEIR PREPARATION

Edward R. de Vries, Lebanon, N.J., assignor to Unifilm Corporation, Somerville, N.J.

No Drawing. Original application July 6, 1970, Ser. No. 52,749. Divided and this application Sept. 1, 1971, Ser. No. 177,160

Int. Cl. C08g *51/14, 51/15, 45/22*

U.S. Cl. 260—29.2 TN 5 Claims

Superior flattening agents for use in flatting compositions which provide smooth transparent flat coatings having improved resistance to whitening, burnishing and abrasion that withstand subjection to elevated temperatures without loss of flatness are discrete particles having a fine size range for about 0.02 to about 10 microns of a crystalline, thermoplastic, polar organic polymer having a softening point of from about 120° C. to about 240° C. which is insoluble in common coating solvents for film-forming organic binders and soluble only at elevated temperatures in strong organic solvents for organic polymers.

3,737,403

ELECTRIC SWITCH MATERIAL BASED ON A BLEND OF THREE EPOXY COMPONENTS

Hartmut Claus, Regensburg, Germany, assignor to Sachsenwerk Licht- und Kraft-Aktiengesellschaft, Munich, Germany

Continuation-in-part of abandoned application Ser. No. 883,250, Dec. 8, 1969. This application Dec. 18, 1970, Ser. No. 99,424

Claims priority, application Germany, Dec. 6, 1968, P 18 17 698.2

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 2 Claims

A castable material formed from a mixture of cycloaliphatic and aromatic epoxy resins with an agent for increasing gas evolution upon heating. This material is useful for constructing structural members of an arc-extinguishing chamber in an electrical switch.

3,737,404

PIGMENT COMPOSITIONS CONTAINING RUTILE TITANIA AND PARTICULATE UREA-FORMALDEHYDE RESIN

Gregor Berstein, Newton Center, Mass., assignor to Cabot Corporation, Boston, Mass.

No Drawing. Filed May 4, 1970, Ser. No. 34,529

Int. Cl. C08g *51/04*

U.S. Cl. 260—39 R 5 Claims

Improved aqueous emulsion type paints and pigment bases therefor are described in which the principal opacifying pigment is a rutile titania pigment and there is also incorporated therewith per 100 parts of said rutile titania pigment between about 2 and about 20 parts by weight of a substantially water-insoluble, high molecular weight, cross-linked urea-formaldehyde resin in highly dispersed particulate form. Said particulate urea-formaldehyde resin is characterized by a BET specific surface area of between about 15 and about 100 square meters per gram and preferably has a volatile content of not over about 15% by weight.

3,737,405

POLYMERIZABLE COMPOSITIONS WITH IMPROVED ADHESION CONTAINING DI- OR TRIPROPYLENE GLYCOL

Joseph Linder and Mel M. Gallant, both % Fibre Glass-Evercoat Company, Inc., 6600 Cornell Road, Cincinnati, Ohio 45242

No Drawing. Continuation-in-part of abandoned application Ser. No. 9,431, Feb. 6, 1970. This application Sept. 2, 1971, Ser. No. 177,458

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R 8 Claims

The addition of dipropylene glycol and tripropylene glycol to unsaturated polyester-vinyl monomer compositions with talc improves adhesion to metal and shortens the time for development of adhesion.

3,737,406

REACTIVE EPOXY-ONIUM CATALYSTS FOR SYNTHESIS OF POLYOXAZOLIDONES

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,947

Int. Cl. C08g *30/00*

U.S. Cl. 260—47 EP 17 Claims

A process for preparing polyoxazolidones is provided in which a polyepoxide is reacted with a polyisocyanate in the presence of chemically reactive epoxyonium catalysts, selected from the class of ammonium and phosphonium halides having at least one oxirane moiety. Novel polymers are obtained when these new catalysts containing two or more oxirane groups are condensed with polyisocyanates.

3,737,407
BISPHENOL-A-FUMARATE POLYESTER-CINNAMATE PHOTOPOLYMER
Daniel C. Thomas, Covina, Calif., assignor to Lithoplate, Inc., Covina, Calif.
No Drawing. Continuation of abandoned application Ser. No. 835,764, June 23, 1969. This application June 1, 1971, Ser. No. 149,024
Int. Cl. C08g *17/10, 17/14*
U.S. Cl. 260—47 UA 1 Claim

Bisphenol-A-fumarate polyester resin is reacted with a cinnamoylating agent, such as cinnamoyl chloride, to give a photopolymer, useful in lithographic plates.

3,737,408
BAKING ENAMEL VEHICLE COMPRISING THE REACTION PRODUCT OF AN OXAZOLINE WITH PHENOL
Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.
No Drawing. Original application May 12, 1970, Ser. No. 36,680. Divided and this application Sept. 30, 1971, Ser. No. 185,383
Int. Cl. C08g *9/24, 9/30*
U.S. Cl. 260—47 CP 13 Claims

An improved vehicle for the formulation of baking enamels obtained by reacting an oxazoline with phenol.

3,737,409
COPOLYCARBONATE OF BIS-3,5 - DIMETHYL-4-HYDROXYPHENYL) SULFONE WITH BISPHENOL-A
Daniel W. Fox, Pittsfield, Mass., assignor to General Electric Company
No Drawing. Continuation-in-part of application Ser. No. 7,978, Feb. 2, 1970, which is a continuation of application Ser. No. 622,074, Mar. 10, 1967, both now abandoned. This application Mar. 8, 1971, Ser. No. 122,165
Int. Cl. C08g *17/13*
U.S. Cl. 260—49 4 Claims

A copolymer of the reaction product of (1) bis-(3,5-dimethyl-4-hydroxyphenyl) sulfone, (2) 2,2-bis-(4-hydroxyphenyl) propane and (3) a carbonate precursor wherein the reaction mixture of (1) and (2) are initially 40–99 weight percent of (1) and correspondingly 60–1 weight percent of (2). In addition, this invention is directed to a high heat distortion, orientable textile fiber of the copolymer set forth above.

3,737,410
METHOD OF ZINC-MODIFIED RESIN MANUFACTURE BY REACTING NOVOLAKS WITH ZINC DIBENZOATE
Hans J. Mueller, Brookville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Aug. 5, 1971, Ser. No. 169,542
Int. Cl. C08g *5/18*
U.S. Cl. 260—59 9 Claims

A method (and product therefrom) of manufacturing zinc-modified phenol-formaldehyde novolak resins for use as color-developing materials in pressure-sensitive record sheet material. The method involves the use of zinc dibenzoate and a weak base, for treatment of the chosen novolak in a hot melt reaction.

3,737,411
CURED POLY(ARYLENE SULFIDE) RESINS WITH QUINONES AND THEIR PREPARATION
Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 19, 1971, Ser. No. 144,987
Int. Cl. C08g *15/00*
U.S. Cl. 260—63 R 11 Claims

The processing characteristics of poly(arylene sulfide) resins are improved by incorporating therein a small amount of at least one compound possessing a quinone structure. The aromatic sulfide polymers treated in accordance with the invention retain their thermoplastic nature and can be used in a variety of industrial applications, e.g., as molding compositions.

3,737,412
METHYLOLATED OLEFIN-MALEIMIDE COPOLYMERS AND METHOD FOR PREPARING
Bernard S. Wildi, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Original application Mar. 24, 1969, Ser. No. 809,993. Divided and this application Sept. 7, 1971, Ser. No. 178,510
Int. Cl. C08g *9/24*
U.S. Cl. 260—67.5 3 Claims

N-hydroxymethyl- and/or N-halomethyl olefin-maleimide copolymers as new compositions of matter; the process of preparing said N-hydroxymethyl copolymers from olefin-maleimide copolymers and formaldehyde; and the process of preparing said halomethyl copolymers from said hydroxymethyl copolymers and a halogenating agent. The new compositions of matter are useful as resinous substrates in biopolymer synthesis.

3,737,413
THERMOPLASTIC AROMATIC POLYUREAS
Heinrich Krimm, Krefeld-Bockum, Gunther Lenz, Krefeld, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 24, 1971, Ser. No. 201,977
Claims priority, application Germany, Nov. 27, 1970, P 20 58 503.9
Int. Cl. C08g *22/02*
U.S. Cl. 260—77.5 C 2 Claims

The invention relates to new high molecular linear thermoplastic aromatic N-alkyl-substituted polyureas, and to a process for their manufacture by polycondensation.

3,737,414
BIURET-POLYETHYLENIMINE RESINS
Alvin Francis Beale, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 8, 1972, Ser. No. 232,909
Int. Cl. C08g *22/02;* A01g *29/00;* C05g *3/00*
U.S. Cl. 260—77.5 C 11 Claims

Resins of polyethylenimines having a molecular weight of at least 300 and biuret are prepared by heating and reacting them in an inert organic solvent in which the resin is insoluble until 1.4 to 2.0 moles of ammonia per mole of biuret are given off.

3,737,415
POLYMERCAPTAN POLYMERIC SEALANT FORMULATION
Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
No Drawing. Filed Sept. 17, 1971, Ser. No. 181,597
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 7 Claims

A cured sealant composition comprising polymercaptan terminated polymers having at least on the average 2.5 pendent thiol groups per molecule and at least one alkyl monomercaptan.

3,737,416
PROCESS FOR PREPARING AN ALTERNATING COPOLYMER OF AN α-OLEFIN AND BUTADIENE
Kiyoshige Hayashi, Tokyo, and Akihiro Kawasaki and Isao Maruyama, Ichihara-shi, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
No Drawing. Filed Mar. 3, 1971, Ser. No. 120,405
Claims priority, application Japan, Mar. 17, 1970, 45/21,994, 45/21,995; July 24, 1970, 45/64,344, 45/64,345; Nov. 6, 1970, 45/97,132, 45/97,133
Int. Cl. C08d *1/14, 3/06, 3/02*
U.S. Cl. 260—82.1 13 Claims

Alternating copolymers of an α-olefin butadiene are formed by reaction in the presence of a catalyst compris-

ing an organoaluminum compound having the formula AlR_3 wherein R represents a C_1–C_{12} hydrocarbon radical selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl radicals and an organotitanium compound having

structure in the molecule wherein R is as defined above and X is halogen.

3,737,417

PROCESS FOR PREPARING AN ALTERNATING COPOLYMER OF AN α-OLEFIN AND A CONJUGATED DIENE

Kiyoshige Hayashi, Tokyo, and Akihiro Kawasaki and Isao Maruyama, Ichihara-shi, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

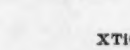
Filed May 5, 1971, Ser. No. 140,552

Claims priority, application Japan, May 7, 1970, 45/38,253; July 24, 1970, 45/64,344, 45/64,345; Nov. 6, 1970, 45/97,130, 45/97,132, 45/97,133

Int. Cl. C08d *1/12, 3/10, 3/04*

U.S. Cl. 260—84.1 19 Claims

Alternating copolymers of an α-olefin and a C_5–C_{12} conjugated diene are formed by reaction in the presence of a catalyst comprising an organoaluminum compound having the formula AlR_3 wherein R represents a C_1–C_{12} hydrocarbon radical selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl radicals and an organotitanium compound having



structure in the molecule wherein R is as defined above and X is halogen.

3,737,418

DIPENTENE/β-PINENE COPOLYMERS

Erwin Richard Ruckel, Darien, Ronald Frank Phillips, New Milford, and Herbert George Arlt, Jr., Ridgefield, Conn., assignors to Arizona Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 76,348, Sept. 29, 1970. This application July 2, 1971, Ser. No. 159,233

Int. Cl. C08f *15/04*

U.S. Cl. 260—88.2 D 3 Claims

A process for the production of a series of β-pinene/dipentene copolymers is given whereby the ratio of the monomers are varied to produce a variety of polyterpene resins having utility as hot-melt coating compositions and pressure-sensitive adhesive compositions.

3,737,419

ALKENE OXIDE POLYMERIZATION

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 7, 1965, Ser. No. 462,122

Int. Cl. C08f *3/34, 7/12*

U.S. Cl. 260—88.3 16 Claims

Epoxide compounds are polymerized with a catalyst comprising (a) an organometallic compound selected from the group consisting of organoaluminum and organozinc compounds and (b) a metal salt of a carboxylic acid. The rubbery high molecular weight polymers produced have substantial utility in the automobile industry for fabricating articles such as motor mounts, body mounts, suspension system parts, hoses, tubing, and the like.

3,737,420

ANTISTATIC ACRYLONITRILE POLYMERS

Dieter Brokmeier, Dormagen, Helmut Englehard, Leverkusen, Francis Bentz, Cologne, and Armin Kohler and Gunther Nischk, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

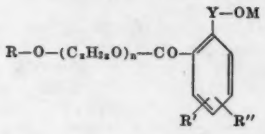
No Drawing. Filed Sept. 3, 1971, Ser. No. 177,826

Claims priority, application Germany, Sept. 3, 1970, P 20 43 647.9

Int. Cl. C08f *3/76, 15/22, 45/58*

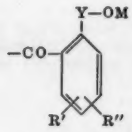
U.S. Cl. 260—85.5 R 17 Claims

The invention relates to acrylonitrile polymer compositions comprising from 1 to 20% by weight, based on total composition, of one or more antistatic compounds having the general formula



in which

R represents a C_1 to C_{30}-alkyl, cycloalkyl, C_3 to C_{30}-alkenyl, aryl, polyaryl, alkylaryl, arylalkyl group and a group having the formula



R′ and R″ each represent hydrogen, a C_1 to C_4 alkyl group and halogen,

x represents a number from 1 to 4,

n represents 0 or a number from 1 to 100,

Y represents an SO_2 or CO group, and

M represents a hydrogen or alkali metal atom.

3,737,421

PROCESS OF JOINING BY MEANS OF POLYHALOGEN COMPOUNDS

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 864,825, Oct. 8, 1969, abandoned, and a continuation-in-part of Ser. No. 575,967, Aug. 30, 1966, abandoned. This application Feb. 2, 1971, Ser. No. 112,026

Int. Cl. C08d *5/04, 3/08, 3/12*

U.S. Cl. 260—94.2 M 6 Claims

Molecules of low molecular weight polymers derived at least in part from a diene monomer, are joined to produce branched polymers and copolymers of increased molecular weight. The polymers which are joined are live polymers, i.e., they have one or more "live ends." The joining agents consist of, or comprise, a saturated or unsaturated, straight or branched chain or cyclo-containing aliphatic hydrocarbon which contains one to 50 or more carbon atoms and comprises three or four halogens on a terminal carbon.

3,737,422

L-HISTIDYL-L-PROLINE AMIDE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Feb. 4, 1970, Ser. No. 8,700
Int. Cl. C07c *103/52;* C07g *7/00*
U.S. Cl. 260—112.5 1 Claim

A new synthetic route for preparing pyroglutamylhistidylproline amide in two steps leads to an excellent yield of a highly potent product. The new method uses free histidylproline amide TRH as the starting material and an active ester of pyroglutamic acid as the coreactant.

3,737,423

PROCESS FOR THE PREPARATION OF A CARBOXYLIC ACID AMIDE

Teruaki Mukaiyama, Masaaki Ueki, Rei Matsueda, and Hiroshi Maruyama, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,419
Claims priority, application Japan, Nov. 19, 1969, 44/92,685
Int. Cl. C07c *103/52;* C07g *7/00*
U.S. Cl. 260—112.5 5 Claims

An improved and novel process for the preparation of a carboxylic acid amide which comprises reacting a carboxylic acid with an organic amine or a sulfenic acid with an organic amine or a sulfenic acid amide thereof in the presence of a tertiary phosphine and a disulfide of a mercaptoheterocyclic compound containing a nitrogen-carbon double bond with which the disulfide linkage is conjugated.

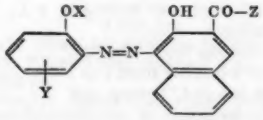
3,737,424

PHENYL-AZO-NAPHTHOL COMPOUNDS

James M. Straley and David J. Wallace, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Feb. 2, 1968, Ser. No. 707,438, now Patent No. 3,515,506, dated June 2, 1970, which is a continuation-in-part of application Ser. No. 394,063, Sept. 2, 1964. Divided and this application Mar. 23, 1970, Ser. No. 22,062
Int. Cl. C09b *29/20*
U.S. Cl. 260—204 7 Claims

Compounds having the formula



wherein X is alkyl; Y is hydrogen, halogen, alkyl, alkoxy, or trifluoromethyl; and Z is alkoxy, amino, alkylamino, morpholino, piperidino or cyclohexylamino, are useful for dyeing polypropylene containing nickel or cobalt.

3,737,425

DERIVATIVES OF LINCOMYCIN

Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,110
Int. Cl. C08b *19/00*
U.S. Cl. 260—210 R 10 Claims

Alkyl α-thiolincosaminide is reacted with periodate to form alkyl 1-thio-α-D-galactohexodialdo-1,5-pyranoside, which is reacted with cyanide to form alkyl 6-cyano-1-thio-α-D-galactopyranoside. The latter is converted to antibacterially active 8-nor-lincomycins. First the 3,4-O-positions are covered by an ylidene group. This can be done initially by deacylating alkyl N-acetyl-3,4-O-ylidene-α-thiolincosaminides. The resulting alkyl 3,4-O-ylidene-α-thiolincosaminide is treated successively with periodate and cyanide. The alkyl 6-cyano-3,4-O-ylidene-α-thiolincosaminide is then tosylated and the resulting 2,7-di-O-tosyl derivatives are reduced with lithium aluminum hydride to form the 6,7-aziridino derivative which on N-acylation and solvoylsis, decaylation, and reacylation with the acid moiety of lincomycin or an analog thereof, yields the desired 8-nor-lincomycin or analog thereof. When the solvoylsis is effected with methanol or other alkanol, antibacterially active 7-O-alkyl-8-norlincomycins are obtained.

3,737,426

BIODEGRADEABLE SURFACTANTS FROM STARCH-DERIVED GLYCOSIDES

Peter E. Throckmorton, Burnsville, and David Aelony, Minneapolis, Minn., Richard R. Egan, Worthington, Ohio, and Felix Otey, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,742
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 2 Claims

Highly biodegradable surface-active products for cleaning and emulsifying agents and the like are obtained by the chemical reaction of starch-derived ethylene and propylene polyol glycosides such as glycol and glycerol glycosides with ethylene and propylene oxides, long-chain epoxyalkanes, and chlorosulfonic acid.

3,737,427

NOVEL PROCESS FOR THE PREPARATION OF α-ALKYL-19-NOR-STEROIDS

Albertus Joannes van den Broek, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,524
Claims priority, application Netherlands, Mar. 24, 1970, 7004241
Int. Cl. C07c *173/00*
U.S. Cl. 260—397.3 2 Claims

The present invention relates to a novel method for the preparation of a Δ^4-3-keto-6α-alkyl-19-nor-steroid comprising hydrolysing a 3-enolacylate of the corresponding 6β-alkylisomer under alkaline conditions.

3,737,428

MANUFACTURE OF UREA AND DERIVATIVES THEREOF

Shigeru Tsutsumi, Hirakata, and Noboru Sonoda, Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka-shi, and Chiyoda Kako Kensetsu Kabushiki Kaisha, Kanagawa-ken, Japan

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,040
Claims priority, application Japan, Mar. 28, 1969, 44/24,269
Int. Cl. C07c *127/02, 127/16, 127/20*
U.S. Cl. 260—239.3 R 12 Claims

In manufacturing urea or a derivative thereof from ammonia or amine, the present process is characterized by reacting ammonia or amine with carbon monoxide in the presence of selenium.

3,737,429

PREPARATION OF 4,5,6,7-TETRAHYDROCYCLOPENTA-1,3-DIOXINONES-(4)

Gerhard Jager, Wuppertal-Vohwinkel, and Richard Wegler, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,136
Claims priority, application Germany, Nov. 14, 1969, P 19 57 312.7
Int. Cl. C07d *15/00*
U.S. Cl. 260—240 D 7 Claims

Preparing 4,5,6,7-tetrahydrocyclopenta-1,3-dioxinones-(4), some of which are new, by reacting an adipic acid dihalide having two hydrogen atoms on one α-carbon

atom with an aldehyde or ketone in the presence of a tertiary amine as acid binder. The compounds are useful as intermediates in the preparation of fungicides.

3,737,430

N,N'-BIS[(TRI(SUBSTITUTED))SILYLALKYLENE]-1,4-XYLENE-α,α'-DIIMINE

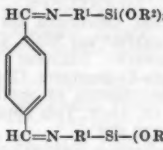
Lloyd H. Brown, Crystal Lake, Andrew P. Dunlop, Riverside, and Daniel S. P. Eftax, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Original application Mar. 3, 1971, Ser. No. 120,737, now Patent No. 3,681,420, dated Aug. 1, 1972. Divided and this application Apr. 5, 1972, Ser. No. 241,475

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G 3 Claims

A new composition of the formula:



wherein R^1 is an alkylene radical and wherein OR^2 is a hydrolyzable group and R^2 is alkyl, aryl, heterocyclic, or substituted derivatives thereof; useful for example in promoting resin to sand and resin to resin bonds.

3,737,431

PREPARATION OF SULFENAMIDES BY CATALYTIC OXIDATION

Robert Henry Campbell, and Raleigh Warren Wise, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 634,096, April 27, 1967, abandoned. This application Feb. 24, 1970, Ser. No. 13,804

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 17 Claims

Metal phthalocyanines are oxidation catalysts for the preparation of sulfenamides in the reaction of primary or secondary amines with 2-mercaptobenzothiazole, an alkali metal salt of 2-mercaptobenzothiazole, a dithiocarbamate, a dithiocarbamic acid, a thiuram disulfide, or 2,2'-dithiobis(benzothiazole).

3,737,432

BRIDGED ISOCYANURATES

Thomas F. George, Clayton, and Daniel J. Lange, St. Louis, Mo., assignors to The P. D. George Company, St. Louis, Mo.

No Drawing. Original application Jan. 31, 1968, Ser. No. 701,826. Divided and this application June 17, 1971, Ser. No. 154,174

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS 4 Claims

Bridged isocyanurate (BIC) derivatives and resins, including polyesters, polyester-amides, polyester-imides, polyester-amide-imides, etc., prepared from bridged isocyanurate derivatives, i.e. compounds or polymers containing at least two bridged isocyanurate units preferably derived from hydroxyalkyl, such as hydroxyethyl, isocyanurates and most preferably from tris (2-hydroxyethyl) isocyanurate or its equivalent. Examples of the bridging unit comprise (1) ether groups, (2) acetal groups, (3) carbonate groups, (4) hydrocarbon groups, (5) urethane groups and (6) combinations thereof, etc.

Resins derived from BIC derivatives may also be blended and/or copolymerized with hydantoin polymers to yield hydantoin BIC polymers. The hydantoin polymers employed may be prepared by reacting polyglycines and polyisocyanates, and most preferably diglycines and diisocyanates.

These resins may be cured by using conventional curing agents, curing resins such as melamine-aldehyde, phenol-aldehyde, etc. resins.

These resins may be employed in electrical insulation, particularly as wire enamels, and for other uses.

3,737,433

CERTAIN OXOALKYLDIMETHYLXANTHINES

Werner Mohler, Hofheim, Taunus, and Mario Reiser and Kurt Popendiker, Wiesbaden, Germany, assignors to Chemische Werke Albert Aktiengesellschift, Wiesbaden, Germany

No Drawing. Continuation of application Ser. No. 762,989, Sept. 26, 1968, which is a continuation-in-part of application Ser. No. 483,803, Aug. 30, 1965. This application Aug. 28, 1969, Ser. No. 854,032

Claims priority, application Germany, Sept. 5, 1964, C 33,811, C 33,812; July 2, 1965, C 36,289; July 10, 1965, C 36,362; July 24, 1965, C 36,493

Int. Cl. C07d *57/40*

U.S. Cl. 260—256 20 Claims

[(ω-1)-oxoalkyl]-3,7-dimethylxanthines in which the oxoalkyl has from 4 to 7 carbon atoms and 7-[(ω-1)-oxoalkyl]-1,3-dimethylxanthines in which the oxoalkyl has from 5 to 8 carbon atoms, while the keto group is separated from the xanthine nucleus by at least two carbon atoms. These compounds have a marked vaso-dilatory effect with a low toxicity.

3,737,434

CERTAIN 2-ACYL-2,4-DIHYDRO-6-PHENYL[1,2,3,5]THIATRIAZOLO[5,4-a][1,4]BENZODIAZEPINE - 1-OXIDES AND PROCESS

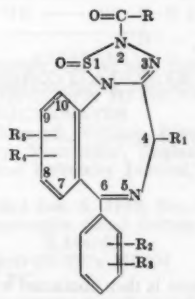
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,679

Int. Cl. C07d *99/10*

U.S. Cl. 260—302 F 6 Claims

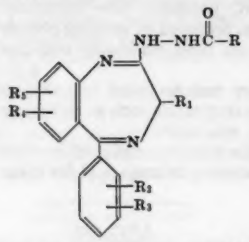
A 2-acyl-2,4-dihydro - 6 - phenyl[1,2,3,5]thiatriazolo-[5,4-a][1,4]benzodiazepine-1-oxide of the Formula II



II

wherein R is hydrogen or alkyl of 1 to 2 carbon atoms, inclusive; wherein R_1 is hydrogen or alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, fluoro, chloro, bromo, iodo, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfonyl, alkylsulfinyl, amino, alkanoylamino in which the carbon moiety is of 1 to 3 carbon atoms and dialkylamino in which alkyl is of 1 to 3 carbon atoms,

inclusive, are prepared by reacting a benzodiazepin-2-yl hydrazide of the Formula I



I

wherein R, R_1, R_2, R_3, R_4, and R_5 are defined as above with thionyl chloride.

The compounds of Formula II and the pharmacologically acceptable acid addition salts thereof are useful sedatives and tranquilizers for mammals and birds.

3,737,435

CYCLIC NITRILE CARBONATE GROUP-CONTAINING CHLOROFORMATES

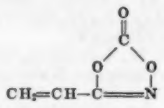
Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Application Feb. 10, 1969, Ser. No. 798,186, now Patent No. 3,609,163, dated Sept. 28, 1971, which is a continuation-in-part of application Ser. No. 681,925, Nov. 9, 1967, now Patent No. 3,480,595, which in turn is a continuation-in-part of application Ser. No. 592,285, Nov. 7, 1966. Divided and this application Sept. 2, 1970, Ser. No. 69,125

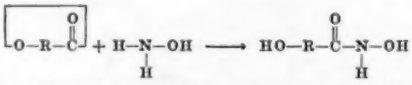
Int. Cl. C07d *85/06*

U.S. Cl. 260—307 A **9 Claims**

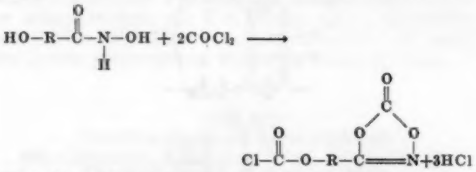
A multi-step process for preparing ethylenically-unsaturated cyclic nitrile carbonate compounds such as ethene nitrile carbonate,



is disclosed. A lacetone is first reacted with hydroxylamine to obtain a hydroxyl group-containing monohydroxamic acid:



The hydroxamic acid is then phosgenated to obtain a cyclic nitrile carbonate group-containing chloroformate:



The chloroformate is then contacted with an organic, tertiary amine having a pK value below about 5 to effect decarboxylation and dehydrochlorination of the chloroformate and production of an ethylenically-unsaturated cyclic nitrile carbonate compound such as ethene nitrile carbonate, shown above. Thus, the ethylenically-unsaturated cyclic nitrile carbonate compounds can enter into addition polymerization reactions as well as condensation reactions with labile hydrogen-containing compounds to yield a variety of polymeric materials, such as polyurethanes, which can be employed in coating and molding compositions.

3,737,436

α-TETRAZOLYL - 6-SUBSTITUTED TRYPTAMINE AND α-TETRAZOLYL - 5,6 - DISUBSTITUTED-TRYPTAMINE COMPOUNDS

Edmund C. Kornfeld, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application July 5, 1968, Ser. No. 742,490, now Patent No. 3,615,700, dated Oct. 26, 1971. Divided and this application Feb. 12, 1971, Ser. No. 115,094

Int. Cl. C07d *55/56*

U.S. Cl. 260—308 D **8 Claims**

α-Tetrazolyl-6-substituted-tryptamine and α-tetrazolyl-5,6-disubstituted-tryptamine compounds useful as non-nutritive sweetening agents, and intermediates for the preparation thereof.

3,737,437

WATER-SOLUBLE METAL PHTHALOCYANINE DYESTUFFS

Hanswilli von Brachel, Offenbach am Main, and Friedrich Aldebert, Frankfurt am Main, Germany, assignors to Cassella Fabwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

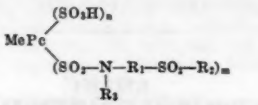
No Drawing. Continuation of application Ser. No. 832,025, June 10, 1969. This application Feb. 29, 1972, Ser. No. 230,470

Claims priority, application Switzerland, Aug. 12, 1968, 12,078/68

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **1 Claim**

Water-soluble metal phthalocyanine dyestuffs of the formula



and the preparation thereof and the use thereof, particularly as reactive dyestuffs for cellulose materials.

3,737,438

N-[2-FORMYLPROPYLTHIO(2)]-IMIDES

Ernst Roos, Cologne, Manfred Abele, Porz-Wahn, Roland Nast, Dormagen, and Theo Kempermann and Rudiger Schubart, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,612

Claims priority, application Germany, Feb. 7, 1970, P 20 05 692.2

Int. Cl. C07d *27/10, 27/18, 27/52*

U.S. Cl. 260—326 S **3 Claims**

This invention relates to new sulphenamides of 2-formyl propyl-2-sulphenic acid and to their use in the production and processing of mixtures based on a natural or synthetic rubber. The novel compounds are prepared by reacting 2-formyl propyl-2-sulphenic chloride with amines and amides in the presence of an acid binding agent. The retarders can be mixed into the rubber in the usual way.

3,737,439

2-PYRROLIDINE ACRYLAMIDE

Carolina Coronelli, Giangualberto Gallo, and Graziella Beretta, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,755

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.3 **1 Claim**

A 1-pyrroline-2-acrylamide, which is suitable for use as an antibiotic (herein referred to as pyracrimycin A) is produced by cultivation of *Streptomyces eridani* n. Sp. ATCC 21619 and can be isolated from the fermentation medium by extraction. The antibiotic substance is active against various Gram positive and Gram negative bacteria. The dihydro derivative of 1-pyrroline-2-acrylamide is also disclosed.

3,737,440

POLYGLYCOLIC ACID IN SOLUTIONS

Edward E. Schmitt, Norwalk, Conn., and William J. Bailey, Hyattsville, Md., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 34,593, May 4, 1970. This application Aug. 12, 1971, Ser. No. 171,320

Int. Cl. C08g *51/34*

U.S. Cl. 260—32.8 R 2 Claims

Hexafluoroisopropyl alcohol and hexafluoroacetone sesquihydrate are disclosed as unique solvents for preparing solutions of polyglycolic acid. Such solutions are useful as spinning dopes for wet or dry spinning of polyglycolic acid, for preparing cast films of polyglycolic acid, and for performing a variety of analytical procedures on polyglycolic acid which require the polymer to be in solution.

3,737,441

PROCESS FOR THE PREPARATION OF METHYL VINYL KETONE AND 2,5-DIHYDROFURAN

Bernard Charavel, Aubagne, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Dec. 17, 1968, Ser. No. 784,438

Claims priority, application France, Dec. 20, 1967, 133,052

Int. Cl. C07d *5/08, 45/04*

U.S. Cl. 260—346.1 R 4 Claims

The preparation of methyl vinyl ketone and 2,5-dihydrofuran by oxidation of butadiene alone or in combination with butene-1 by first forming a complex of the olefinic compound with the mercuric salt and then heating the complex to an elevated temperature within the range of 90° to 100° C.

3,737,442

THIO-ETHER DERIVATIVES OF 3,7,11-TRIMETHYLDODECA-2,4-DIENOATES USEFUL IN THE CONTROL OF INSECTS

John W. Baum, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 170,387, Aug. 9, 1971. This application Nov. 11, 1971, Ser. No. 197,952

Int. Cl. C08h *3/00, 9/02*

U.S. Cl. 260—399 10 Claims

Novel thia compounds of Formula A which includes di-unsaturated acids, esters and derivatives thereof, intermediates therefor, which are useful for the control of insects.

3,737,443

ω-GUANIDINO ACID AMIDE DERIVATIVES AND MANUFACTURING THE SAME

Sadao Hashimoto, Itano-gun, Katsushi Okada and Ryuji Sakakibara, Naruto, and Setsuro Fujii, Tokushima, Japan, assignors to Taiho Pharmaceutical Company Limited, Chiyoda-ku, Tokyo-to, Japan

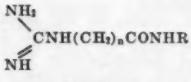
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,241

Claims priority, application Japan, Apr. 2, 1969, 44/25,805

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 5 Claims

The present ω-guanidino acid amide derivatives are new compounds having a structural formula of



wherein R is an alkyl of 2 to 18 carbon atoms, a phenylalkyl(C_1 to C_4) or a phenyl containing or not containing a substitute of hydroxyl, alkyl(C_1 to C_4) or haloalkyl(C_1 to C_4), and n is an integer of 1 to 10. The above derivatives and onium salts thereof are excellent in pharmacological activity, particularly in antagonism to bradykinin and in inhibition on edema, and thus useful as anti-inflammatory agent.

3,737,444

CONTINUOUS PROCESS FOR THE SEPARATION OF MIXTURES OF FATTY ACIDS OF DIFFERENT MELTING POINTS

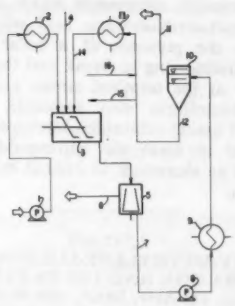
Helmut Hartmann, Langenfeld, Rhineland, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Dec. 29, 1970, Ser. No. 102,471

Claims priority, application Germany, Dec. 31, 1969, P 19 65 644.1; June 20, 1970, P 20 30 529.7

Int. Cl. C09f *5/10*

U.S. Cl. 260—419 16 Claims



The invention relates to an improvement of the known continuous process for the separation of solid and liquid fatty acids, particularly of commercial oleic acid and commercial stearic acid, in which the starting mixture by treating with an aqueous wetting agent solution is converted to a dispersion of liquid fatty acids and solid fatty acid particles, the formed dispersion is separated by centrifuging into two phases of different specific weights, the lighted phase consists substantially of the liquid fatty acids and the heavier phase of a dispersion of the solid fatty acid particles in the aqueous wetting agent solution. After separation of this suspension the wetting agent solution is returned to the process. The improvement consists in withdrawing a part of the recycling wetting agent solution from the cycle and replacing it with fresh wetting agent solution.

3,737,445

CATALYTIC CARBONYLATION OF AROMATIC NITROSO COMPOUNDS TO PREPARE CORRESPONDING ISOCYANATES

David Dodman, Kenneth William Pearson, and John Mathers Woolley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,348

Claims priority, application Great Britain, Jan. 10, 1968, 1,446/68

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PC 3 Claims

Aromatic isocyanates are manufactured by reacting an aromatic nitro or nitroso compound with carbon monoxide in the presence of a catalyst which is a mixture of at least one noble metal selected from ruthenium, rhodium, palladium, osmium, iridium and platinum, or a compound of such a metal, and a composition comprising two or more heavy metals in the form of their oxides, hydroxides, carbonates, basic carbonates or basic phosphates, or mixtures thereof, the said composition having been prepared by a procedure including as an essential

step either a coprecipitation from solution or a heating together of the heavy metals as their hydroxides or thermally unstable salts.

3,737,446

AMINO-SUBSTITUTED MERCAPTO COMPOUNDS AND THEIR PREPARATION BY THE REACTION OF AMINOTHIOSULFURIC ACIDS AND AZIRIDINES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Original application Jan. 13, 1966, Ser. No. 520,377, now Patent No. 3,502,727, dated Mar. 24, 1970. Divided and this application Dec. 19, 1969, Ser. No. 886,756

Int. Cl. C07c *161/00*

U.S. Cl. 260—453 R **5 Claims**

A method for producing novel polyfunctional amino-substituted mercapto compounds which comprises reacting an aminoalkanethiosulfuric acid with an aziridinyl compound in the presence of a polar solvent which causes the aziridine ring to break and the addition reaction to occur at the terminal amino group site on the aminoalkanethiosulfuric acid molecule. The resulting polyfunctional amino-substituted mercapto acid can then be hydrolyzed to form the corresponding thiol compound, useful as shortstops in radical initiated polymerization system.

3,737,447

CARBYLOXY-METHYLENE-SULFONATES, THEIR PREPARATION AND USE IN SYNTHESES

Yehuda Mazur, Tel Aviv, Israel, and Michael H. Karger, Stanmore, England, assignors to Yeda Research and Development Co., Ltd., Rehovoth, Israel

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,349

Int. Cl. C07c *143/68*

U.S. Cl. 260—456 R **2 Claims**

New ether sulfonates of the general formula

$$R_1O—CH_2O—SO_2R_2$$

in which R_1 and R_2 are each an unsubstituted or substituted alkyl, cycloalkyl, aralkyl, aryl or heteroalkyl radical. The compounds are valuable for carrying out various chemical reactions such as oxyalkylation, splitting of ethers, preparation of amines and the like.

3,737,448

SPIRO[3.3]HEPTANE AMINO ACIDS

Larry J. Loeffler, Bethesda, Md., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Apr. 1, 1970, Ser. No. 24,885, now Patent No. 3,666,790, dated May 30, 1972. Divided and this application June 16, 1971, Ser. No. 153,860

Int. Cl. C07c *121/46*

U.S. Cl. 260—464 **3 Claims**

Novel spiro[3.3]heptane amino acids and their derivatives are disclosed and their method of preparation is described.

3,737,449

PRODUCTION OF HYDROXYBENZONITRILES

Heinz Eilingsfeld, Frankenthal, and Horst Scheuermann, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Akteingesellschaft, Ludwigshafen am Rhineland, Germany

Filed June 18, 1970, Ser. No. 47,579

Claims priority, application Germany, July 2, 1969, P 19 33 525.2

Int. Cl. C07c *121/74, 121/78*

U.S. Cl. 260—465 D **5 Claims**

Production of chlorine- and/or cyano-substituted hydroxybenzonitriles or their alkali or alkaline earth metal salts by reacting chlorobenzonitriles with alkali or alkaline earth metal nitrites and optionally converting the salts to the hydroxy compound by acidification. The products are intermediates in the manufacture of dyes and plant protection agents.

3,737,450

INSECT CONTROL AGENTS

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,165

Int. Cl. C07c *69/74, 61/16, 57/02*

U.S. Cl. 260—468 H **8 Claims**

Aliphatic hydrocarbon cyclopropyl and bis-cyclopropyl and aliphatic substituted cyclopropyl and bis-cyclopropyl acids and esters and derivatives thereof, intermediates therefor, syntheses thereof, and the control of insects.

3,737,451

CIS-3,4 - DIARYL-CYCLOPENTYLIDENE- AND 1 - CYCLOPENTENE-1-ACETIC ACIDS AND DERIVATIVES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,887

Int. Cl. C07c *65/14, 69/76*

U.S. Cl. 260—469 **37 Claims**

The invention discloses cis-3,4-diphenyl-cyclopentylidene-acetic acids and cis-3,4-diphenyl-1-cyclopentene-1-acetic acids, and amide derivatives thereof, such compounds having pharmacological activity and being useful, for example, as anti-inflammatory agent. The acids may be prepared by hydrolysis, e.g., saponification, of the corresponding esters and the amides may be prepared from the acids by reacting the acid with a thionylhalide and then with the appropriate amine, in a known manner. The esters may be prepared by reaction of the corresponding cis-3,4-diphenyl-cyclopentane-one with a trialkylphosphono-acetate in the presence of a strong base, e.g., sodium hydride.

3,737,452

LOWER ALKYL 5-METHYLHEXO-3,4-DIENOATES AND PREPARATION THEREOF

Hugo Jorge Monteiro, Mountain View, and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,971

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **11 Claims**

Preparation of lower alkyl 5-methylhexa-3,4-dienoates by the reaction of 3-methyl-1-butyn-3-ol and orthoester which is converted into lower alkyl 5-methylexa-2,4-dienoate, an intermediate for alkyl chrysanthemates.

3,737,453

2-AMINOETHANOL SALT OF DEHYDROABIETIC ACID

Noah J. Halbrook and Ray V. Lawrence, Olustee, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 13, 1967, Ser. No. 682,541. Divided and this application Dec. 2, 1970, Ser. No. 94,556

Int. Cl. C07c *91/04*

U.S. Cl. 260—501.17 **1 Claim**

This invention relates to the separation of dehydroabietic acid. More particularly, this invention relates to the separation of dehydroabietic acid from rosin, other rosin acids and rosin materials either present in rosin or formed in the disproportionation of rosin. Still more particularly, this invention relates to a method of separating dehydroabietic acid by forming the 2-aminoethanol salt of dehydroabietic acid and obtaining the pure acid from the amine salt.

3,737,454

RACEMIZATION OF OPTICALLY ACTIVE AMMONIUM N-ACETYL-α-AMINOPHENYLACETATE

Ichiro Chibata and Shigeki Yamada, Osaka, and Masao Yamamoto, Kyoto, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,584
Claims priority, application Japan, Sept. 10, 1969, 44/71,752
Int. Cl. C07c *103/12*
U.S. Cl. 260—518 R 7 Claims

Optically active ammonium N-acetyl-α-aminophenylacetate is racemized by heating. The heating is preferably conducted at temperatures from about 100° C. to about 180° C.

3,737,455

SUBSTITUTED 1-(LOWERALKYL-SULFINYLBENZYLIDENE)-3-INDENYLOXYACETIC ACID AND ESTERS THEREOF

Tsung-Ying Shen, Westfield, Howard Jones, Holmdel, and Michael W. Fordice, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,631
Int. Cl. C07c *147/14*
U.S. Cl. 260—520 7 Claims

New substituted indene acids and non-toxic pharmaceutically acceptable amides, esters and salts derived therefrom. The substituted indene acids disclosed herein have anti-inflammatory, anti-pyretic and analgesic activity. Also included herein are methods of preparing said indene acid compounds, pharmaceutical compositions having said indene acid compounds as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,737,456

NOVEL PROCESS FOR THE PRODUCTION OF 1-CHLORO-3-PHOSPHOLENES

Curtis P. Smith, Cheshire, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed June 1, 1971, Ser. No. 148,996
Int. Cl. C07d *105/02*
U.S. Cl. 260—543 P 2 Claims

A conjugated diene, a member of the group consisting of phosphorus trichloride, phosphorus tribromide and phosphorus triiodide and a hydrocarbyl phosphine are reacted at a temperature of from about 20° C. to reflux in the presence of a compound which will inhibit polymerization of the diene reactant; to prepare the corresponding 1-halophospholenes. The products of the process are for the most part novel compounds, useful as intermediates in the preparation of selective solvents and catalysts for the preparation of carbodiimides from isocyanates.

3,737,457

PROCESS FOR MAKING COMPOUNDS CONTAINING THE SULFONYL CYANIDE GROUP

John Michael Cox and Ranajit Ghosh, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 15, 1969, Ser. No. 825,042
Claims priority, application Great Britain, June 13, 1968, 28,228/68
Int. Cl. C07c *161/00*
U.S. Cl. 260—545 R 9 Claims

A process for making compounds containing the sulphonyl cyanide group, SO_2CN, which comprises reacting a salt of a sulphinic acid with cyanogen chloride.

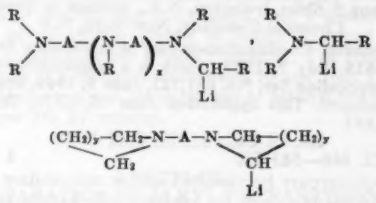
3,737,458

PRODUCT OF ALPHA MONOLITHIATED AMINE AND CARBONYL COMPOUNDS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 825,384, May 16, 1969, now Patent No. 3,536,679, which is a continuation-in-part of application Ser. No. 589,240, June 24, 1969, now Patent No. 3,451,988, which in turn is a continuation-in-part of applications Ser. No. 266,188, Mar. 19, 1963, and Ser. No. 290,315, June 25, 1963, both now abandoned. This application Aug. 6, 1970, Ser. No. 61,813
Int. Cl. C07c *85/00*
U.S. Cl. 260—570 R 9 Claims

A method for forming an amine adduct of a compound that reacts in a "Grignard" manner, said method comprising the step of reacting an alpha mono lithiated amine, said amine being characterized by one of the following structural formulae:



or

wherein R can be the same or different and is a C_1–C_{10} alkyl; X is an integer of 0 to 10,000; y is an integer of 0 to 3; and A is a radical which is (1) a cycloaliphatic radical or a cycloaliphatic radical containing C_1–C_4 alkyl groups, said radicals having ring structures of 4 to 7 members and being attached to the nitrogen atoms at 1,2 or 1,3 positions on said ring; or (2) a radical consisting of 1 to 20 methylenic groups wherein each methylenic group contains 0 to 2 monovalent hydrocarbon radicals of 1 to 6 carbon atoms, with a compound that reacts in a "Grignard" manner under conditions of temperature, concentrations of reactants and pressures sufficient to form said amine adduct.

In addition, this invention relates to a method for preparing an organo-lithium amine complex which comprises admixing a lithiated amine similar to the one described hereinabove with a hydrocarbon group-containing compound having an acidity corresponding to a pKa of not more than 38.

3,737,459

CATALYZED REACTION OF AN ARYLAMINE WITH AN ALKYLAMINE TO FORM AN N-ALKYL SUBSTITUTED ARYLAMINE

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,308
Int. Cl. C07c *87/62*
U.S. Cl. 260—577 14 Claims

A primary or secondary aryl or alkyarylamine is reacted with an alkylamine under liquid phase conditions in the presence of a ruthenium, osmium, rhenium, or technetium-containing catalyst, preferably in complex association with a biphyllic ligand, to produce an aryl or alkaryl amine having a nitrogen-bonded alkyl group. A typical process comprises contacting aniline with tributylamine in a liquid reaction medium containing a minor amount of ruthenium trichloride and triphenylphosphine to produce N-butyl aniline and dibutylamine.

3,737,460

PRODUCTION OF SECONDARY ALKYL PRIMARY AMINES

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,598

Int. Cl. C07c *85/10*

U.S. Cl. 260—583 M 13 Claims

Process for producing secondary alkyl primary amines, in particular, secondary alkyl primary amines having from 6 to 25 carbon atoms wherein a C_6–C_{25} mono-nitroparaffin is reacted with hydrogen in the presence of a stabilized palladium-carbon catalyst where the activity and crush strength of the catalyst is enhanced and the reaction is selective in the conversion of mono-nitroparaffins to secondary alkyl primary amines.

3,737,461

POLYMERIC TERTIARY BUTYL AMINE VULCANIZING AGENTS AND METHOD OF PREPARATION

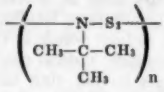
Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 839,615, July 7, 1969, which is a continuation-in-part of application Ser. No. 831,722, June 9, 1969, both now abandoned. This application June 16, 1971, Ser. No. 153,833

Int. Cl. C07c *83/00*; C08f *27/06*

U.S. Cl. 260—583 EE 1 Claim

A poly(tertiary butylamine) sulfide composition useful as a vulcanizing agent for synthetic and natural rubbers, the repeating structural unit of this composition having the following formula:



wherein *n* can range between 3 and 100, and the process of manufacturing the same.

3,737,462

METHOD FOR THE PREPARATION OF 1,2-DIAMINOPROPANE

Zafarullah K. Cheema, Morristown, Robert L. Formaini, Millington, and Harry E. Ulmer, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 4, 1971, Ser. No. 172,349

Int. Cl. C07c *85/10*

U.S. Cl. 260—583 P 11 Claims

1,2-diaminopropane can be prepared from 1,2-methylglyoxime in good yield by hydrogenation in the presence of a hydrogenation catalyst in anhydrous alcoholic medium at low temperatures under strongly basic conditions.

3,737,463

RESOLUTION OF OPTICALLY ACTIVE PROPYLENE GLYCOL AND CERTAIN KETONES

William L. Howard and Joanne D. Burger, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,666

The portion of the term of the patent subsequent to Jan. 20, 1987, has been disclaimed

Int. Cl. C07c *31/20, 49/30, 49/36*

U.S. Cl. 260—587 6 Claims

Optically active propylene glycol and optically active ketones are produced by condensing propylene glycol with a cyclic ketone having an asymmetric center, one of the reactants being optically active, to form a mixture of diastereoisomers of a cyclic ketal, separating one of the diastereoisomers by fractional crystallization and hydrolyzing the separated diastereoisomer to recover the optically active propylene glycol or ketone.

3,737,464

DEUTERATED PARAFORMALDEHYDE PROCESS

Joseph G. Atkinson, Montreal, Quebec, and David W. Cillis, Ottawa, Ontario, Canada, assignors to Charles E. Frosst & Co., Montreal, Quebec, Canada

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,782

Claims priority, application Canada, Mar. 16, 1968, 15,065; Jan. 27, 1969, 41,272

Int. Cl. C07c *47/10*

U.S. Cl. 260—615.5 6 Claims

A method for the preparation of deuterated paraformaldehyde which consists in treating methylene halide with deuterium oxide in the presence of a base to afford deuterated methylene halide, treating said deuterated methylene halide with alkali metal acetate to obtain deuterated methylene diacetate and hydrolyzing the said intermediate to the desired product.

3,737,465

BIS-METHYLOL COMPOUNDS

Robert E. Karll, Munster, Ind., and Edmund J. Piasek, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 484,758, Sept. 2, 1965. This application Dec. 16, 1969, Ser. No. 885,653

Int. Cl. C07c *39/16*

U.S. Cl. 260—619 A 4 Claims

Novel compounds having two terminal hydroxymethyl-5-alkylbenzyl substituents and having all alkyl-substituents of molecular weight upward from about 400 are obtained by a strong alkali promoted condensation of 4-alkylphenol with formaldehyde. Because of the presence of two hydroxymethyl (methylol) substituted alkylhydroxybenzyl groups, these compounds can be considered as bis-methylols since they are more reactive as diols than polyphenols. These compounds through their methylol substituents react with a compound having at least one HN< group to form novel oil soluble amine products which impart detergency-dispersancy and antioxidant properties to the oil in which they are dissolved. They also react with mono-acids to form simple diesters, with dibasic acids to form high molecular weight polyesters, with ammonia to form high molecular weight amines having secondary amino groups bridging in a chain and even terminal amino methyl groups and with alkylene di- and polyamines to form more complex oil soluble amines which as solutes impart to solvent oil anti-oxidant, detergent-dispersant properties.

3,737,466

PRODUCTION OF CRESOLS

John Alan Sharp and Raymond Ernest Dean, Bradford, and Michael Fielding, Manchester, England, assignors to The Coal Tar Research Association, Gomersal, Cleckheaton, Yorkshire, England

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,913

Int. Cl. C07c *37/16*

U.S. Cl. 260—621 R 8 Claims

Cresols are produced from phenol in a two-stage process. In the first stage, a mixture of methanol and phenol is passed over an alumina catalyst at a temperature between 250° and 450°. In the second stage, the reaction product of the first stage is mixed, if necessary, with more phenol and passed over an alumina catalyst at a temperature

between 350° and 500° C. The amount of phenol in the mixture in the second stage is preferably such that the average molecular weight of the mixture is about 108.

3,737,467
PREPARATION OF ALLYLIC TERPENIC ALCOHOLS

William D. Fordham, 149 Kingwood Chase, Leigh-on-Sea, Essex, England, and Hifzur R. Ansari, 36 Wilmot Road, London, England

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,640
Claims priority, application Great Britain, May 17, 1968, 23,646/68
Int. Cl. C07c *33/02, 35/02*
U.S. Cl. 260—631.5 15 Claims

C_{10} allylic terpenic halides are solvolysed in good yield to the corresponding alcohols in a one-step process comprising aqueous solvolysis in the presence of a liquid organic compound, preferably acetone, in which the terpenic halide and water are both separately mixable and using a cuprous halide catalyst. The reaction is preferably conducted at from −20° C. to +30° C. and at a pH 7.5 to 9.0.

3,737,468
HALOGENATED METHANONAPHTHALENE AND DIMETHANOPHENANTHRENE COMPOUNDS

Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,655
Int. Cl. C07c *23/46*
U.S. Cl. 260—648 C 6 Claims

Novel compositions of matter comprising polyhalo-substituted ethylenepolyhydroalkanonaphthalenes and polyhalo - substituted ethylenepolyhydrodialkanophenanthrenes as exemplified by 1,2,3,4,9,9-hexachloro-5,6-(1,2-dichloroethylene) - 1,4,4a,5,6,8a - hexahydro - 1,4 - methanonaphthalene or 1,2,3,4,5,6,7,8,11,11,12,12-dodecachloro - 9,10 - (1,2 - dichloroethylene) - 1,4,4a,5,5a,8,8a,9,10,10a - decahydro - 1,4,5,8 - dimethanophenanthrene are useful as additives to polymeric materials whereby desirable physical characteristics of flame retardancy are imparted to these materials.

3,737,469
PROCESS FOR THE PRODUCTION OF BROMOSTYRENE AND ALKYL BROMIDE

Gila Berger, Stephen Daren, Moshe Levy, and David Vofsi, Rehovot, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,239
Claims priority, application Israel, Nov. 23, 1970, 35,708
Int. Cl. C07c *25/28*
U.S. Cl. 260—650 R 8 Claims

The present invention relates to a novel process for the simutlaneous production of bromostyrene and an alkyl bromide, which comprises contacting alpha-bromoethyl bromobenzene or betabromoethyl bromobenzene and an alkanol with a molten alkali metal bromide or with an alkaline earth bromide at a temperature between about 250–500° C. The reactants are advantageously passed through a bed of the molten salt and rapidly quenched after the passage through the reaction zone.

3,737,470
SEPARATION AND RECOVERY OF PERHALOGENATED FLUOROCARBONS

John E. Cottle, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 8, 1970, Ser. No. 44,513
Int. Cl. C07c *17/34, 19/08, 21/18*
U.S. Cl. 260—653 7 Claims

Perhalogenated fluorocarbons, e.g., perfluorocarbons and/or chlorofluorocarbons, contained in a mixture together with partially halogenated fluorohydrocarbons, e.g., chlorofluorohydrocarbons, are separated and recovered by dehydrohalogenating said partially halogenated fluorohydrocarbons to the corresponding olefins which are then halogenated to perhalogenated fluorocarbons. The resultant mixture is then fractionated to separate and recover the perhalogenated fluorocarbons.

3,737,471
PROCESS FOR REMOVING OXYGEN FROM TETRAFLUOROETHYLENE OR TETRAFLUOROETHYLENE-CONTAINING GAS MIXTURES

Heinrich Paucksch, Hannover, Werner Rudolph, Anderten, Hannover, and Joachim Massonne, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,793
Claims priority, application Germany, Nov. 13, 1970, P 20 55 931.3
Int. Cl. C07c *21/18*
U.S. Cl. 260—653.3 4 Claims

In a process for removing oxygen from tetrafluoroethylene or tetrafluoroethylene-containing gas mixtures, the gas or gas mixture is contacted with a contact substance of pyrophoric copper in highly dispersed form which is stabilized on a carrier material. The treatment is effected at a temperature between 50 and 160° C. The contents of oxygen in the initial gas or gas mixture should be below 5% by volume.

3,737,472
PREPARATION OF ALKYL PHENANTHRENES

William S. Green, Columbus, Ohio, and John W. Newman, Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

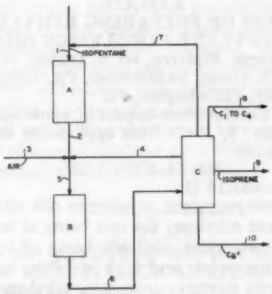
No Drawing. Filed May 6, 1971, Ser. No. 140,950
Int. Cl. C07c *15/30*
U.S. Cl. 260—668 F 10 Claims

Light cycle oil resulting from the manufacture of petroleum pitch is contacted with a catalyst in the presence of hydrogen gas and fractionated into a cut containing alkyl phenanthrenes.

3,737,473
TWO-STAGE DEHYDROGENATION PROCESS

Dennis L. Ripley, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 27, 1970, Ser. No. 58,243
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E 7 Claims



A two-stage dehydrogenation process for isopentane containing feedstreams comprising a non-oxidative paraffin dehydrogenation stage followed by an iron phosphate catalyzed olefin oxidative dehydrogenation stage wherein

said process eliminates the necessity of hydrogen separation steps between the non-oxidative and the oxidative stages.

3,737,474
OLEFIN DIMERIZATION WITH NICKEL COMPLEXES
Howard E. Dunn, Mount Vernon, Ind., assignor to Phillips Petroleum Company
No Drawing. Filed Dec. 11, 1969, Ser. No. 884,351
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **9 Claims**

An olefin is dimerized by contact with a catalyst formed from an organoaluminum compound and a nickel complex of a polymer such as poly(2-vinylpyridine).

3,737,475
ALPHA-OLEFIN PRODUCTION
Ronald F. Mason, Westwell Ashford, England, assignor to Shell Oil Company
No Drawing. Filed Aug. 17, 1972, Ser. No. 281,590
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **8 Claims**

Ethylene is oligomerized to linear, alpha-olefins by reacting ethylene in a C_2–C_4 vic-alkanediol solution in the presence of a catalyst composition produced by contacting in the presence of ethylene (1) a simple divalent nickel salt (2) a boron hydride reducing agent and (3) dicyclohexylphosphinopropionic acid or alkali metal salt thereof.

3,737,476
METHOD OF PREPARATION OF POLYMERS OF PROPYLENE AND/OR BUTYLENES
Jean Claude Bailly, Martigues, France, assignor to Naphtachimie, Paris, France
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,224
Claims priority, application France, Sept. 25, 1969, 6932683
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **8 Claims**

The polymerization of propylene and/or butylenes to produce liquid polymers in high yield and with a high reaction rate in which the monomer or monomers are reacted in the presence of an inert solvent containing in suspension catalytic substances formed of halogenated derivatives of titanium and/or vanadium, organo-aluminum compounds and halogenated derivatives of methane and/or ethane.

3,737,477
PROCESS OF PREPARING ETHYLENE-PROPYLENE COPOLYMER OILS
Richard S. Stearns, Malvern, Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 621,443, Mar. 8, 1967. This application Oct. 5, 1970, Ser. No. 78,190
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **14 Claims**

New ethylene-propylene copolymer oils containing 29–71 mole percent ethylene, the rest being at least substantially entirely propylene, said oils being of high viscosity index, low pour point, and high stability, are produced from monoolefin mixtures containing ethylene and propylene employing specified vanadium-aluminum or titanium-aluminum Ziegler-type catalyst systems. Hydrogen under pressure is used with vanadium-aluminum catalyst system to control molecular weight. Oils of lubricating oil viscosity can be produced directly, or after cracking higher molecular weight oil, said cracking usually, but not necessarily, followed by hydrogenating. Dewaxing can be employed to reduce pour point. Oil fractions have similar desirable lubricating oil properties as the overall copolymer oil.

3,737,478
METHOD FOR MAKING POLYAMIDE ACID SALTS AND PRODUCTS DERIVED THEREFROM
Edith M. Boldebuck, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed May 28, 1971, Ser. No. 148,154
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA **17 Claims**

A method is provided for converting a polyimide to the corresponding polyamide acid salt, utilizing a predetermined amount of a strong base. The polyamide acid salt can be converted to the corresponding polyamide acid. The polyamide acids and polyamide acid salts provided by the subject method can be converted to the polyimide state after being applied to various substrates by standard dip-coating and electrocoating techniques. When utilized with a potentiometric titrator, the method of the invention also can be used to determine imide functionality of polyimide.

3,737,479
COMPOSITION OF POLYORGANOSILOXANE AND POLYPHENYLENE OXIDE
William R. Haaf, Voorhesville, N.Y., assignor to General Electric Company
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,285
Int. Cl. C08g *47/10, 43/02;* **C08f** *33/08*
U.S. Cl. 260—824 R **27 Claims**

There are provided thermoplastic compositions with improved drop-weight impact resistance comprising a polyorganosiloxane and a polyphenylene oxide, optionally containing styrene resins and a minor proportion of a polyolefin.

3,737,480
POLYESTER RESIN COMPOSITION WITH A LONG SHELF LIFE
Eldon E. Stahly, Ellicott City, and Edwin W. Lard, Bowie, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 782,750, Dec. 10, 1968. This application Nov. 13, 1970, Ser. No. 89,495
Int. Cl. C08f *43/02, 43/00*
U.S. Cl. 260—864 **8 Claims**

Uncured, curable, unsaturated polyester resin compositions consisting essentially of an unsaturated polyester, an ethylenically unsaturated monomer such as styrene or a similar monomer inhibited with about 0.1–1.5 mole percent of 4,6-dinitro-o-cresol or 2,4-dinitroaniline having shelf lives in excess of about 100 days at about 70° C.

3,737,481
IMPROVED PROCESS FOR PREPARING PHOTOCHEMICALLY HARDENABLE COMPOSITIONS COMPRISING A PHOTOSENSITIVE SUBSTANCE AND AN UNSATURATED POLYESTER
Silvio Vargiu, Ugo Nistri, and Beppino Passalenti, Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed June 30, 1971, Ser. No. 165,847
Claims priority, application Italy, July 1, 1970, 26,851/70
Int. Cl. C08f *1/60, 21/02*
U.S. Cl. 260—865 **8 Claims**

There is disclosed a process for preparing an improved photochemically hardenable composition comprising a photosensitive substance and an unsaturated polyester formed by reacting an acrylic or vinyl monomer with the polycondensation product of a polycarboxylic acid and

a polyhydric alcohol, wherein prior to mixing the photosensitive substance with the unsaturated polyester, said polyester is first treated with 0.1 to 1.0 part by weight for every 100 parts by weight of said polyester, of an oxide of an alkaline earth metal, at a temperature of from 40 to 70° C., and for a time range of from 0.2 to 3.0 hours.

3,737,482

VULCANIZABLE BLEND OF A POLYACRYLATE WITH A BUTADIENE POLYMER

Dale E. Kelly and Charles W. Gerdes, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 17, 1971, Ser. No. 144,286

Int. Cl. C08f *29/12, 29/50, 33/08*

U.S. Cl. 260—876 B **6 Claims**

A vulcanizable elastomer composition comprising at least one polymerized elastomeric ester of acrylic acid having a weight percent in the range of about 50 to about 95, the ester moiety thereof being an alkyl radical in the range of 1–10 carbon atoms per molecule and another constituent having a weight percent in the range of about 5 to about 50 and being one of a homopolymer of butadiene or a copolymer of butadiene-styrene.

3,737,483

GRAFT COPOLYMERIZATION OF MALEIC ANHYDRIDE AND AN ALPHA OLEFIN ONTO AN ETHYLENE-VINYL ACETATE COPOLYMER

Yujiro Kosaka, Masaru Uemura, Mitsutaka Saito, Yuji Suzuki, and Kunio Takamoto, Yamaguchi-ken, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tokyo, Japan

No Drawing. Filed June 11, 1971, Ser. No. 152,367

Claims priority, application Japan, June 26, 1970, 45/55,787; Sept. 9, 1970, 45/79,067

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **10 Claims**

A carboxylated polymer product is produced by polymerizing 1–50 parts by weight of a monomeric mixture of maleic anhydride and an α-olefin in contact with 50–99 parts by weight of an ethylene vinyl acetate copolymer having a vinyl acetate content of at least 3%, using a free radical polymerization initiator.

3,737,484

COPOLYMERS STABILIZED WITH A THIOURACIL COMPOUND

Harold V. Wood and Terry D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 7, 1971, Ser. No. 141,429

Int. Cl. C08f *19/08, 45/60*

U.S. Cl. 260—880 B **10 Claims**

Resinous polymers prepared by the copolymerization of vinyl-substituted aromatic compounds and conjugated dienes utilizing an organolithium initiator, which are sometimes referred to as block copolymers, are stabilized against the effects of heat with a thiouracil compound.

3,737,485

TRIPENTAERYTHRITOL TETRAPHOSPHITE

Ingenuin Hechenbleikner, West Cornwall, Conn., assignor to Weston Chemical Co., Inc., Montvale, N.J.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,372

Int. Cl. C07d *105/04;* **C08f** *45/58*

U.S. Cl. 260—927 R **1 Claim**

The compound bis-3,9(4-oxymethyl-1-phospha - 2,6,7-trioxabicyclo (2,2,2) octane)-2,4,8,10-tetraoxa - 3,9 - diphospha-spiro (5,5) undecane is prepared. It is useful for stabilizing halogen containing resins, hydrocarbons, polymers, etc.

3,737,486

POLYPHOSPHOROUS BISPHENAL CONDENSATES

Henry G. Schutze and Herschel C. Williams, Baytown, Tex., Norman P. Neureiter, Bethesda, Md., and Delos E. Brown, White Plains, N.Y., assignors to Esso Research and Engineering Company

No Drawing. Division of application Ser. No. 611,785, Nov. 14, 1966, now Patent No. 3,510,507, which is a division of applications Ser. No. 248,876, Jan. 2, 1963, now abandoned, and Ser. No. 596,720, Nov. 16, 1966, application Ser. No. 596,720 being a substitute for application Ser. No. 248,876. Divided and this application Jan. 7, 1970, Ser. No. 1,295

Int. Cl. C07f *9/18;* **C08g** *51/58*

U.S. Cl. 260—930 **6 Claims**

Polyphosphorous condensation products, polyborate condensation products, polycarbonate condensation products and polysilicate condensation products of 4,4′-bisphenols are especially effective stabilizers for polyolefins.

3,737,487

PROCESS FOR PREPARING ARYL ALKYL PHOSPHATES

George M. Nichols, Chicago, Ill., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 766,898, Oct. 11, 1968. This application Aug. 19, 1970, Ser. No. 65,353

Int. Cl. C07f *9/08, 9/12*

U.S. Cl. 260—973 **12 Claims**

Aryl alkyl phosphates are prepared by admixing an aryl phosphorohalidate with an alcohol, passing the mixture downwardly through a column containing an upwardly flowing stream of vaporized inert solvent, the temperature within the column being at a level conducive to reaction between the aryl phosphorohalidate and the alcohol, and removing a low boiling mixture of alcohol, solvent and hydrogen halide from the top of the column and recovering the desired aryl alkyl phosphate ester from the bottom.

3,737,488

PROCESS FOR PRODUCING MOULDED FOAMS FROM RUBBER LATICES BY USING MICROWAVE HEATING

David Porter; William Shore Campbell, and Edward William Duck, all of Southampton, England, assignors to The International Synthetic Rubber Company, Limited, Hampshire, England

Filed June 30, 1970, Ser. No. 51,371

Claims priority, application Great Britain, July 4, 1969, 33,967/69

Int. Cl. B29d *27/04;* **B29b** *5/26*

U.S. Cl. 264—26 **22 Claims**

A process for preparing a moulded foam comprises subjecting a foamed curable rubber latex composition containing a delayed action or heat sensitive gelling system in a closed mould to radiation of radio frequency, preferably of a frequency at least 20 mc/sec and in one embodiment of the invention at least 800 mc/sec, of an intensity and for a duration to cause gelling and thereafter curing the gelled foam to a solid foamed article. The invention is very applicable to the preparation of foamed articles from a filled latex of an emulsion polymerized styrene-butadiene rubber.

3,737,489

METHOD OF APPLYING REFRACTORY LINING ON HOT METALLURGICAL LADLES, SOAKING PITS AND FURNACES

Crawford B. Murton, Pittsburgh, Pa., assignor to Air Repair, Inc., Pittsburgh, Pa.

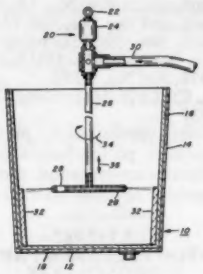
Filed Oct. 1, 1970, Ser. No. 77,059

Int. Cl. C04b *35/14, 35/66;* **F27d** *1/16*

U.S. Cl. 264—30 **9 Claims**

A method for relining metallurgical ladles, soaking pits, and furnaces at temperatures from about 400° to about 3000° F. by propelling a mixture of refractory

materials against a prior-existing lining without prior cooling thereof, the relining thickness being from about ¼ inch up to 10 inches or more. The refractory mixture consists essentially of, by weight, from about ¼% to about 4% of an organic binder, from about 40% to 70% of clay, and from about 28% to about 58% quartzite. To facilitate its application, the refractory mixture is mixed with about 4% to 6% water.

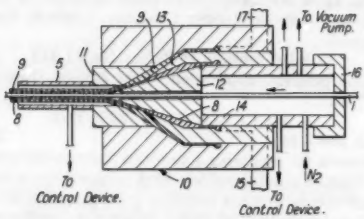


3,737,490

MANUFACTURE OF INSULATED ELECTRIC CABLES

Peter Nicholson, Chatham, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Dec. 9, 1970, Ser. No. 96,463
Claims priority, application Great Britain, Dec. 9, 1969, 60,011/69
The portion of the term of the patent subsequent to Sept. 5, 1989, has been disclaimed
Int. Cl. B29f 3/10; B29h 9/08
U.S. Cl. 264—40 **10 Claims**



A composite covering comprising at least two layers of different covering materials is extruded on a continuously advancing core by passing the core through the core tube of an extrusion machine which feeds extruded, peripherally continuous layers of the covering materials simultaneously towards the outlet end of the extrusion machine and causing the extruded layers to come into complete and intimate interfacial contact upstream of the outlet end of the extrusion machine. The composite covering so formed is treated, e.g. cured, continuously by passing the covered core through a chamber hermetically sealed to the outlet end of the extrusion machine and containing a fluid medium at super-atmospheric pressure. At the same time, fluid under pressure is injected into the interior of the core tube and is maintained at a pressure less than that of the fluid medium by an amount such that the pressure difference across the extruded composite covering at the extrusion orifice is sufficient to cause the extruded composite covering to collapse firmly on to the core as it emerges from the extrusion machine.

3,737,491

CATALYSTS

Cornelius Marthinus Stander, Kempton Park, Transvaal, and David Owen Hughes, Boksburg, Transvaal, Republic of South Africa, assignors to African Explosives and Chemical Industries Limited, Johannesburg, Transvaal, Republic of South Africa

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,577
Claims priority, application Republic of South Africa, Dec. 12, 1969, 69/8,640, 69/8,641
Int. Cl. B29h 7/20
U.S. Cl. 264—43 **7 Claims**

Catalyst supports comprising porous, shaped refractory bodies are made by heating a mixture of constituents of which at least one is selected from the nitrate, oxide or hydroxide of aluminum and the dioxide of titanium and at least one is selected from the nitrates of alkaline earth metals to a first elevated temperature sufficient to produce a binding agent within the mixture, comminuting the resulting material, shaping the material into bodies and heating the shaped bodies at a second elevated temperature for a period of time sufficient to complete the reactions between the constituents to produce bodies of adequate mechanical strength to be self supporting.

3,737,492

METHOD OF PREPARING A POROUS CATALYST-CONTAINING ALKALINE EARTH METAL ALUMINATE OR TITANATE BODY

Cornelius Marthinus Stander, Kempton Park, Transvaal, and David Owen Hughes, Boksburg, Transvaal, Republic of South Africa, assignors to African Explosives and Chemical Industries Limited, Johannesburg, Transvaal, Republic of South Africa

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,579
Claims priority, application Republic of South Africa, Dec. 12, 1969, 69/8,637, 69/8,638, 69/8,639
Int. Cl. B29h 7/20
U.S. Cl. 264—43 **7 Claims**

Process for making supported catalysts as porous, shaped bodies comprising heating a constituent including at least one oxide of a metal or metals or at least one substance from which a metal or the oxide of a metal can be formed with at least one mixture of one or more first compounds and one or more second compounds to a first elevated temperature sufficient to produce a binding agent, comminuting the resulting material, shaping the material into bodies and heating the shaped bodies at a second elevated temperature for a period of time sufficient to complete the reactions between the first and second compounds and produce catalysts as shaped bodies of adequate mechanical strength to be self supporting.

3,737,493

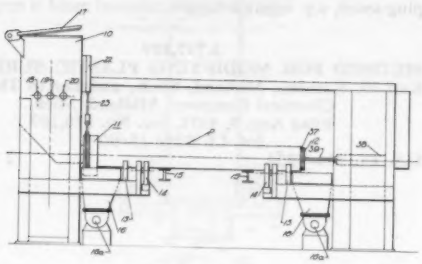
FILLING AN ANNULAR SPACE BETWEEN RADIALLY SPACED COAXIAL TUBES WITH FOAMED CEMENT

Leon Hacker, Springfield, Ill., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Mar. 1, 1971, Ser. No. 122,596
Int. Cl. B28b 23/02, 23/06, 23/08
U.S. Cl. 264—42 **5 Claims**

A method and an apparatus are disclosed for filling the annular space between radially spaced coaxial tubes constituting a double walled pipe. The pipe may be of extruded plastic and comprises inner and outer coaxial tubes with bracing and spacing means therebetween. The pipe at one of its ends is held against and sealed at its inner and outer end surfaces to a filling head and at its other end is held by a back-up plate engaging the inner one of the tubes, so that the space between the tubes is in communication with atmosphere. Foamed grout is ini-

tially introduced to the annular space, forming a reservoir, by gravity so as not to destroy its foamed character and then is forced under relatively low pressure through the annular space lengthwise of the pipe. Gate valve means are provided at the entrance end to initiate and terminate the flow of grout and overflow receptacles are



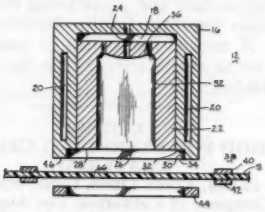
provided at each end of the pipe to collect surplus grout which falls out when the pipe is separated from the filling head and back-up plate. This excess grout is then recirculated to the reservoir. After filling, the pipe is stored in racks for curing of the grout and is then ready for shipment.

3,737,494

FORMING DEEP MOLECULARLY ORIENTED ARTICLES FROM HIGH NITRILE GROUP CONTAINING POLYMERS

William D. Wolf, Simsbury, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 8, 1971, Ser. No. 113,576
Int. Cl. B29c *17/04*
U.S. Cl. 264—89 **8 Claims**



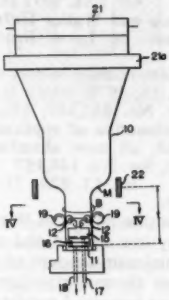
A method of forming articles having relatively balanced molecular orientation from a special type of thermoplastic sheet composed of at least 60 weight percent of a polymer formed from a nitrile group containing monomer, which includes forcing the thermoplastic by means of a plug in an axial direction at a sheet temperature within the range of from about 311 to 390° F., which temperature is above that at which substantial orientation occurs, in order to partially form the article while minimizing development of axial orientation, holding the thus forced material in contact with a surface at a temperature of from about 250 to 310° F. to reduce the temperature of the material to orientation temperature and then expanding the material outwardly against the walls of a mold cavity to obtain radial orientation and finish form the article.

3,737,495

METHOD FOR MANUFACTURING TUBULAR FILMS OF THERMOPLASTIC RESINS

Hiroshi Nagano; Hideo Tomioka; Akira Yamataka; and Hirohiko Yoshida, all of Nagahama-shi, Shiga-ken, Japan, assignors to Mitsubishi Jushi Kabushiki Kaisa Chiyoda-Ku, Tokyo-To, Japan

Division of Ser. No. 750,036, Aug. 5, 1968, Pat. No. 3,635,634. This application Sept. 29, 1970, Ser. No. 76,639
Int. Cl. B29d *23/04*; B29c *25/00*; B29d *7/02*
U.S. Cl. 264—95 **6 Claims**



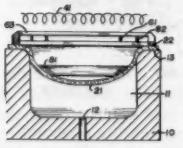
In a method for manufacturing a tubular resinous film wherein a tubular film of a thermoplastic film is extruded from an extrusion nozzle, cooled, heated, expanded and wrapped into a roll, a circumferential twist is intermittently imparted to the tubular resinous film after it is cooled but before it is heated and expanded, or circumferential twists in the opposite directions are imparted alternately, by means of cooperating inner and outer rollers which are revolved in the circumferential direction of the tubular resinous film. Means to cool the extruded tubular resinous film comprises a first stationary cooling cylinder having a diameter slightly smaller than the inner diameter of the tubular resinous film, a second rotary cooling cylinder having a diameter slightly larger than that of the first cooling cylinder and adapted to contact and cool the inner surface of the extruded tubular resinous film, and means to form a layer of cooling gas between the inner surface of the extruded tubular resinous film and the periphery of the first cooling cylinder.

3,737,496

METHOD OF REINFORCING THE WALL OF A THERMO-FORMED ARTICLE

Anson Willard Voorhees, Sr., deceased, late of Pima County, Ariz., by Margaret W. Voorhees, executrix, 4828 E. Grant Road, Tucson, Ariz. 85716

Continuation-in-part of abandoned applications Ser. No. 575,751, Aug. 29, 1966, and Ser. No. 823,895, May 12, 1969. This application Nov. 23, 1970, Ser. No. 92,132
Int. Cl. B29c *17/04, 23/00*
U.S. Cl. 264—92 **5 Claims**



An improvement in the process for drawing a sheet of thermoplastic, synthetic resin to form a shell-like shaped article of a type which will have wall portions excessively

thin as a result of the normal drawing and stretching of the plastic sheet to form the article. The sheet is thickened before it is drawn by the addition of small plastic particles at areas which will form the excessively thin wall portions of the article after it is drawn. The plastic particles are melted and welded into the sheet while it is being heated for the drawing operation, a source of radiant heat being necessary to effect this melting and welding of the particles to the sheet without overheating the sheet.

3,737,497

METHOD FOR THE MANUFACTURE OF PVC BOTTLES

Wolfgang Hafner and Walter Hufnagel, St. Mang, Germany, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 91,178, Nov. 19, 1970, which is a continuation of application Ser. No. 883,667, Dec. 22, 1969, which in turn is a continuation of application Ser. No. 698,691, Jan. 18, 1968, all now abandoned. This application May 28, 1971, Ser. No. 148,157

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 15 Claims

Polyvinyl chloride bottles of thin-wall construction are characterized by low oxygen and carbon dioxide permeability and a minimum amount of total additives and, in particular, a low thermal stabilizer content; in addition these bottles have improved tensile and bursting strength, elasticity, and drop resistance making them most suitable for containing oxygen sensitive and carbonated beverages. The bottles are made by forming a preform, comprising at least 70% vinyl chloride polymer material, at a temperature within the thermoplastic temperature range of the material, adjusting the temperature of the preform to within its thermoelastic range from 90° C. to 140° C., and biaxially stretching the preform by rapidly blow molding it to the dimensions of the mold achieving rates of stretch between about 100% and 1000% and above per second. Best orientation is obtained when the preform is stretched within 3 seconds and at a temperature in the thermoelastic range where the stretching capacity of the preform exceeds about 225%.

3,737,498

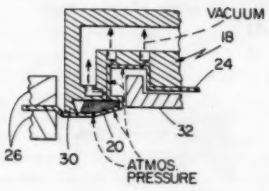
METHOD FOR HEAT AND VACUUM-PRESSURE MACHINE MOLDING

James W. Jackson, East Walpole, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Original application Oct. 29, 1968, Ser. No. 771,576, now Patent No. 3,577,593, dated May 4, 1971. Divided and this application Apr. 16, 1971, Ser. No. 134,897

Int. Cl. B29c *17/04*

U.S. Cl. 264—92 3 Claims



Method for heat and vacuum-pressure machine molding of hollow articles from thermoplastic sheet material, involving a mold (normally with alternate vacuum and air pressure sources) having one or more relatively movable complementary molding members for forming undercut, reverse bend, flanged or reentrant portions of said articles, with said member or members being mounted for relative movement, with respect to the molding surface of the mold, into molding position, and thereafter out of such molding position so that a molded article may be freely removed from said mold, said complementary molding member or members being preferably actuated by or through contact with and relative movement of the plastic sheet material by vacuum, with or without the aid of a plug-assist, e.g. where a female external mold is employed.

3,737,499

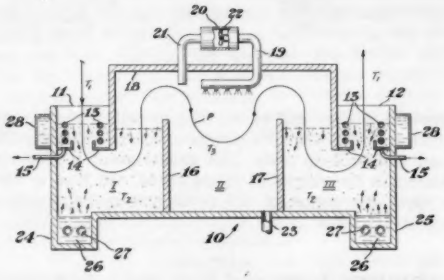
METHOD FOR MODIFYING PLASTIC SURFACES

Karl W. Kamena, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1971, Ser. No. 170,107

Int. Cl. B29c *25/00*

U.S. Cl. 264—134 2 Claims



A method for modifying a plastic surface of a body by exposing the surface to a gaseous solvent atmosphere whereby the solvent is absorbed into the surface, regulating the amount of absorption by controlling the temperature differential between the body surface and the solvent atmosphere, introducing the treated body surface into a second gaseous solvent atmosphere which is maintained at a temperature above the temperature of the treated body surface and withdrawing the body from the treating zones thereby removing substantially all surface blemishes. A method for coating to establish the plastic surface prior to modification, but in the same apparatus, is also provided.

3,737,500

METHOD FOR EXTRUDING GELATINOUS MATERIAL

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

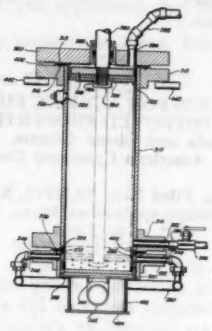
Original application May 6, 1968, Ser. No. 726,840, now Patent No. 3,558,759. Divided and this application June 8, 1970, Ser. No. 44,180

Int. Cl. B01j *2/06*

U.S. Cl. 264—142 3 Claims

A method for producing particulated gelatinous substances, such as gelatinous polymers, and solutions of these materials in which the gel is formed in a reaction chamber equipped with a hydraulically actuated piston and perforate extrusion head and the gelatinous product is subsequently extruded into a stream of solvent or nonsolvent liquid flowing at relatively high velocity on the exterior of the perforate head. The gelatinous substance is displaced from the reaction chamber by introducing a fluid into the reaction chamber above the piston at a sufficiently elevated pressure to displace the substance from the chamber through the perforate extrusion head. The hydraulic pressure actuating the piston is adjusted to maintain the piston in pressure balance during the extrusion operation. Gravitational forces acting upon the piston

cause it to rest upon the upper surface of the gelatinous mass and to advance downwardly through the reactor as the gel is displaced from the chamber. The method of this invention is particularly suited for the preparation of

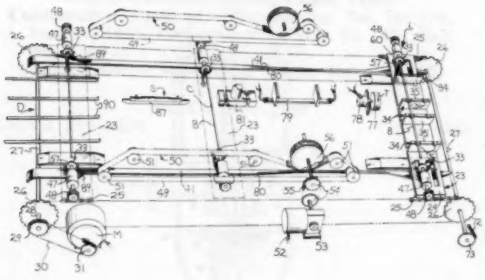


aqueous polymer solutions useful as flooding agents in the recovery of petroleum by water flooding, and is especially adapted for installation at the site of a water injection well.

3,737,501
METHOD OF FORMING PLASTIC TUBULAR ARTICLES

Russell E. Dunipace, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Original application Apr. 22, 1968, Ser. No. 723,351, now Patent No. 3,608,146. Divided and this application Oct. 20, 1970, Ser. No. 82,233
Int. Cl. B29c *17/02*
U.S. Cl. 264—159 **4 Claims**



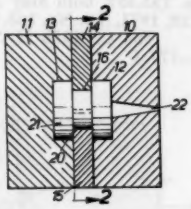
The present invention relates to apparatus and method for conveying and transforming tubular thermoplastic blanks into tubular pipets, medicine droppers, burette points, ampuls, and the like, while advancing continuously along a prescribed path. The invention has particular utility in forming disposable pipets made of thermoplastic material such as polystyrene and the like.

3,737,502
METHOD OF MOLDING WITH FLASH REMOVAL BY MOLD ROTATION

Clive Rees, The Cotswolds Llandegveth, Newport, England

Filed Oct. 12, 1970, Ser. No. 79,756
Claims priority, application Great Britain, Oct. 24, 1969, 52,099/69
Int. Cl. B28b *7/20*; B29c *17/00*
U.S. Cl. 264—161 **6 Claims**

An article, for example a piston, having in its outer surface a continuous recess in the form of an undercut, impression or groove is moulded from a synthetic resinous material in a cavity between axially separable parts of a die assembly. Interposed between adjacent faces of the separable parts of the die assembly and in abutment therewith are at least two separable, complementary, interengaging die plates arranged in edge-to-edge relationship with each other. An opening is defined between the abutting edges of the die plates and is of constant



depth and diameter. The opening defines an intermediate portion of the cavity between open-ended chambers in the separable die parts, and the intermediate portion is of reduced diameter and defines the recess in the article. During the moulding process the die plates are rotated relatively to the article to remove any flash occuring at the interface between the die plates and the surface of the article at points where the die plates abut each other.

3,737,503
PRODUCTION OF THERMOPLASTIC FILAMENTARY YARN

Frank Wilding, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 750,019, Aug. 5, 1968. This application Dec. 3, 1970, Ser. No. 94,939
Int. Cl. D01d *5/20*
U.S. Cl. 264—167 **7 Claims**

A process for producing yarn having undrawn or partially drawn portions therealong comprising feeding the yarn to a nip formed between two rolls one of which has circumferential grooves of lesser width than the yarn whereby less than all of the yarn filaments are gripped at one time, reciprocating the yarn transversely of itself within the nip and withdrawing the yarn at sufficient speed to draw each filament as it becomes gripped by the nip.

3,737,504
PROCESS FOR THE PRODUCTION OF CRIMPED ACRYLONITRILE BASE YARNS WITH AN ISOPROPANOL CONTAINING BATH

Paul Herrbach, Lyon, and Alain Breton, Paris, France, assignors to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques, Paris, France

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,566
Claims priority, application France, Apr. 24, 1970, 7014955
Int. Cl. D01f *7/00*
U.S. Cl. 264—168 **8 Claims**

A process for producing synthetic yarns and fibers containing at least 50% acrylonitrile comprising: spinning an acrylonitrile polymer base solution into a coagulant bath comprising a solvent for the acrylonitrile and isopropanol; drawing the spun filaments in a second bath comprising a solvent for the acrylonitrile and isopropanol; cutting and washing the filaments in a relaxed state; immersing the filaments in boiling water while in a relaxed state; and drying the filaments in a relaxed state. Filaments having a tight reversible crimp are prepared.

3,737,505

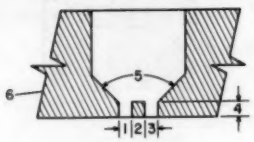
PROCESS FOR MANUFACTURE OF HIGH SHEEN BIFILAMENT YARN AND ELASTIC TEXTILE ARTICLE

Garland Linwood Turner, Chesterfield, Va., Ralph William Schuettler, Fuguay Varina, N.C., and George Howard Collingwood, West Warwick, R.I., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of applications Ser. No. 733,556 and Ser. No. 733,557, both May 31, 1968. This application May 28, 1971, Ser. No. 148,125

Int. Cl. B28h *21/54*

U.S. Cl. 264—177 F 3 Claims



A bifilament yarn comprising two symmetrical lobes fused so that the concave sides intercept at angle θ ranging from 10 to 54°. The yarn has a broad concave area and a narrow edge area of convex shape and preefrably a modification ratio of between 1.65 and 3.0. This bifilament yarn, textured and non-textured, semidull and bright, when converted to plain knit hosiery has a luster in the range of 6.6 to 21 ($K/S \times 100$) units. The textured and non-textured plain knit textile articles consisting of the bifilament yarns of this invention after repetitive elongations of 25 percent have 150–300 percent greater work of recovery and equal improvement in resistance to sagging and wrinkling than other cross-sectional configurations. The bifilament yarns are prepared by melt spinning thermoplastic homopolymers having a relative formic acid viscosity of 25 to 90 at a temperature of 250–280° C. through twin orifices separated from each other for a distance of 0.05 to 4.0 mils.

3,737,506

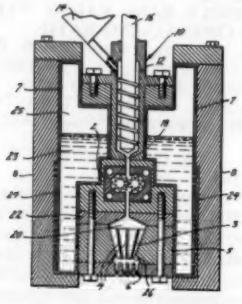
PROCESS AND APPARATUS FOR CONTINUOUS EXTRUSION OF HIGHLY-VISCOUS MELTS

Horst G. Martin, Zug, and Ulrich P. Feer, Nidwalden, Switzerland, assignors to Societe de la Viscose Suisse, Emmenbrucke, Switzerland

Filed Apr. 3, 1970, Ser. No. 25,480

Int. Cl. D01f *7/00*

U.S. Cl. 264—176 F 11 Claims



Apparatus and method of continuously extruding filaments of highly-viscous polymer melts are provided using a truncated cone with surface grooves. The base end of the grooves communicates with a high pressure pump exercising a pressure of 300–1100 atmospheres, and the other end of the grooves communicates with the spinnerette. While flowing through the grooves, the melt temperature increases 5° C. to 60° C. without introducing any external heat.

3,737,507

PROCESS FOR ACRYLIC FIBERS OF IMPROVED PROPERTIES

Keitaro Shimoda and Isamu Obama, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,418

Claims priority, application Japan, Jan. 29, 1971, 46/3,443

Int. Cl. D01f *7/00*

U.S. Cl. 264—182 10 Claims

Acrylic fibers containing streaky inclusions of 2–25% poly(vinyl cyanoethyl ether) of DS value 55–75% and streaky voids are obtained by wet-spinning a solution of the poly(vinyl cyanoethyl ether) and the acrylonitrile in a common solvent, water-washing the wet-gel fiber thus obtained, stretching the wet-gel fiber, and subsequently drying the relaxed fiber. The fiber thus obtained is greatly improved in properties over comparable prior art fibers.

3,737,508

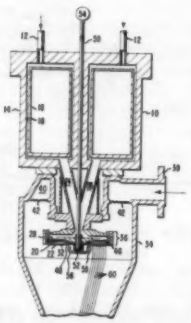
DRY SPINNING APPARATUS AND PROCESS

Jackie A. Weir, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1972, Ser. No. 222,926

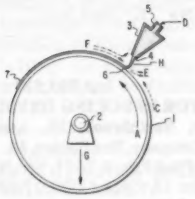
Int. Cl. D01f *7/00*

U.S. Cl. 264—204 4 Claims



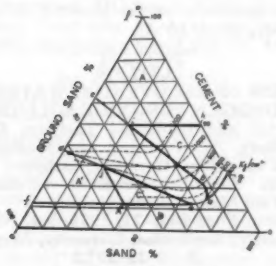
In conventional dry-spinning apparatus and procedure a hot inert gas is introduced to evaporate spinning solvent. In the present invention, a portion of the hot gas is constrained to flow through the filaments as they emerge from the annular spinneret by a gas deflector device located concentrically inside the ring of emerging filaments and by a conduit provided in the center of the spinning head. A vacuum applied to the conduit draws hot gas perpendicularly across the emerging filaments near the exit-face of the spinneret and the deflector device aids in directing the hot gas (now entrained with spinning solvent) to the conduit and in preventing filaments from clogging the conduit. Productivity of the spinning apparatus can be doubled.

3,737,509
FILM CASTING PROCESS
Kingo Kobayashi and Koji Nishizawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of application Ser. No. 700,836, Jan. 26, 1968. This application Apr. 28, 1970, Ser. No. 32,762
Claims priority, application Japan, Jan. 26, 1967, 42/5,235
Int. Cl. B29d *7/02, 7/22*
U.S. Cl. 264—212 2 Claims



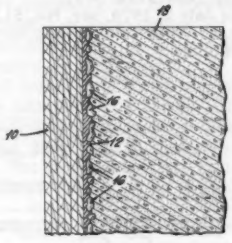
Extruding liquid film forming material onto a moving, curved supporting surface at a position where the curve supporting surface is both upwardly facing and upwardly moving wherein the said material contacts said surface with the angle between a tangent at said supporting surface at said position and horizontal in the direction of support surface travel being between 30° and 60°.

3,737,510
HIGH STRENGTH CONCRETE
Mareaki Takaki, Matsudo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of application Ser. No. 740,199, June 26, 1968. This application Mar. 16, 1971, Ser. No. 124,727
Claims priority, application Japan, July 7, 1967, 42/43,352
Int. Cl. B29c *5/04*
U.S. Cl. 264—234 8 Claims



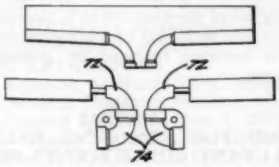
Hollow, cylindrical, concrete products having a compressive strength of at least 600 kg./cm.² are formed from specified mortar mixtures of cement, ground sand having a specific surface of 1000–3000 cm.²/g. and, optionally, a sand having a specific surface area of 45–85 cm.²/g. The mixture is cast with centrifugal force, and the resulting casting is cured with steam under specified conditions.

3,737,511
METHOD OF PRODUCING AN ORNAMENTAL CONCRETE SURFACE
Tony R. Dillon, R.R. 1, Urbana, Ill. 61801
Continuation of abandoned application Ser. No. 880,838, Nov. 28, 1969. This application Jan. 11, 1972, Ser. No. 216,973
Int. Cl. B28b *1/16*
U.S. Cl. 264—256 6 Claims



A method of producing an ornamental concrete surface wherein a coating of an air settable, water plasticizable adhesive is applied to the inner surface of a form for containing concrete. Particulate material is placed on the coating and partially embedded in the substance. The substance then is allowed to set so that the particles become bonded thereto. The form is then positioned for containing concrete and concrete is introduced against the inner surface thereof. The concrete is then allowed to set so that the particles become bonded to the concrete and the substance is at least partially plasticized by the water in the concrete. The form is then removed from the concrete surface formed by the inner surface thereof so that the particles are separated from the substance and remain bonded to the concrete, to thereby ornament the concrete surface.

3,737,512
METHOD FOR MOLDING ELBOWS AND THE LIKE
John D. Stalter, Elkhart, Ind., assignor to Nibco, Inc., Elkhart, Ind.
Original application Sept. 5, 1968, Ser. No. 757,536. Divided and this application Apr. 13, 1971, Ser. No. 133,547
Int. Cl. B29c *7/00*
U.S. Cl. 264—297 7 Claims



An injection-molding method utilizing a mold structure having a plurality of spaced, adjacent internal mold cavities, with the mold structure formed of a pair of relatively movable members, each of which have concavities comprising half of each such molding cavity, wherein the molding cavities have a curving shape designed for the molding of curved objects, wherein the mold structure members form parting lines along each side of such object which lie in planes spaced from and parallel to the

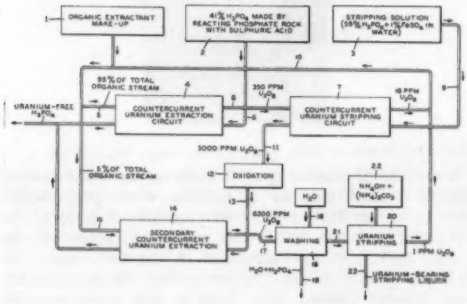
plane in which the longitudinal axis of the molded object lies, and wherein one mold structure member is moved relative to the other when the two members are parted in a manner which wipes the molded objects off a central core structure used to produce tubular objects.

3,737,513

RECOVERY OF URANIUM FROM AN ORGANIC EXTRACTANT BY BACK EXTRACTION WITH H_3PO_4 OR HF

Tadeusz Karol Wiewiorowski, New Orleans, and David James Miller, Gretna, La., assignors to Freeport Minerals Company, New York, N.Y.

Filed July 2, 1970, Ser. No. 51,947
Int. Cl. B01d *11/00*; C01g *56/00*
U.S. Cl. 423—8 8 Claims



A process for the recovery of uranium values from uranium carrying extractants containing a dialkylphosphoric acid and a trialkylphosphine oxide dissolved in an organic solvent is described. The process involves liquid-liquid extraction of the extractants with an aqueous solution containing divalent iron and a complexing agent which may be either phosphoric acid, hydrofluoric acid or mixtures thereof.

3,737,514

EXTRACTION OF ALUMINA FROM ORES

William R. King, Cupertino, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 5, 1970, Ser. No. 78,175
Int. Cl. C01f *7/06, 7/34*
U.S. Cl. 423—121 8 Claims

Alumina in increased yeild is recovered from aluminiferous ores containing titanium and also iron in goethite phase by subjecting the ores to a wet caustic digestion step at temperatures in excess of about 280°C in admixture with a calcium compound added in an amount at least sufficient to convert substantially all of the titanium to a calcium-titanium compound for a time sufficient to accomplish the conversion of goethite to hematite followed by conventional alumina recovery steps.

3,737,515

METHOD FOR REMOVING DELETERIOUS POLLUTANT CONSTITUENTS OF THE EXHAUST GAS OF A COMBUSTION ENGINE

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder- und Patentanstalt, Vaduz, Liechtenstein

Filed Dec. 30, 1970, Ser. No. 102,828
Int. Cl. B01d *53/16*
U.S. Cl. 423—212 6 Claims

A process for removing pollutants from the exhaust gas of an internal combustion engine comprising dispersing the gas through an aqueous wash, a particulate absorbent, a sodium carbonate solution and a desiccant. Optionally the gas may be further treated by catalytic oxidation.

3,737,516

CALCIUM-DEFICIENT HYDROXYLAPATITE FOR USE IN COLUMN CHROMATOGRAPHY

Edward L. Jenner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1971, Ser. No. 121,504
Int. Cl. C01b *15/16, 25/26*
U.S. Cl. 423—308 9 Claims

Disclosed herein is granular calcium-deficient hydroxylapatite having a formula weight ratio of Ca/PO_4 of between about 1.40 to 1.50, useful as a protein adsorption medium in column chromatography. Also disclosed is a one-step process comprising contacting under controlled conditions at least one of calcium chloride, nitrate or acetate with a mixture of secondary and tertiary orthophosphate salts in which the cation is selected from at least one of Na^+, K^+, and NH_4^+.

3,737,517

METHOD FOR REDUCING OXYSULFUR COMPOUNDS

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 8, 1971, Ser. No. 113,722
Int. Cl. C01b *17/20, 17/28*; C01c *1/20*
U.S. Cl. 423—560 23 Claims

Inorganic, water-soluble oxysulfur compounds are reduced by contacting an aqueous solution of the oxysulfur compound and hydrogen with a bimetallic catalyst at reduction conditions. The bimetallic catalyst comprises catalytically effective amounts of a metallic sulfide selected from sulfides of the transition metals from group VI and of a metallic sulfide selected from the sulfides of the transition metals of group VIII combined with a porous carrier material. A specific example of the disclosed invention is a method for reducing an inorganic, water-soluble thiosulfate compound to a sulfide compound by contacting an aqueous solution of the thiosulfate compound and hydrogen, at reduction conditions, with a catalyst comprising a combination of catalytically effective amounts of molybdenum sulfide and of cobalt sulfide with a porous carrier material.

3,737,518

PROCESS FOR PREPARING HYDROGEN PEROXIDE

Giovanni A. Bonetti, Wynnewood, Rudolph Rosenthal, Broomall, Joseph A. Kieras, Lincoln University, and William B. Wise, Glenolden, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,575
Int. Cl. C01b *15/02*; C07c *29/00*
U.S. Cl. 423—587 4 Claims

Hydrogen peroxide is prepared from water and an organic hydroperoxide in the presence of acid at temperatures above about 60° C.

3,737,519

PROCESS OF RECOVERING WATER-FREE HYDROGEN PEROXIDE SOLUTIONS

Gerd Schreyer and Ferdinand Theissen, Grossauheim, Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 21, 1971, Ser. No. 145,078
Claims priority, application Germany, May 23, 1970, P 20 25 237.3
Int. Cl. C01b *15/02*
U.S. Cl. 423—589 14 Claims

Process for preparing water-free hydrogen peroxide solutions from hydrogen peroxide containing working solutions which have been obtained in the preparation of hydrogen peroxide by the anthraquinone process which comprises passing the peroxide containing working solution in co- or countercurrent flow relationship to an organic solvent which is chemically stable and which

is either introduced in the form of a vapor or which is converted into a vapor in situ in a film-forming evaporator whereby the hydrogen peroxide is desorbed into the solvent and thereafter recovering the hydrogen peroxide solutions in the form of a condensate.

3,737,520

SALT-GEL PROCESS FOR THE MANUFACTURE OF FIBROUS ALKALI METAL HEXATITANATES

Howard W. Jacobson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1972, Ser. No. 241,715
Int. Cl. C01g *23/00*
U.S. Cl. 423—598 8 Claims

A process is provided for the preparation of fibrous alkali metal hexatitanates by homogeneously admixing an aqueous alkali metal hydroxide solution and an aqueous titanium oxychloride solution to form a salt-gel which is then calcined at 850°–1050° C. Paper pulp fibers may be included in forming the salt-gel to facilitate recovery of the calcined fibers.

3,737,521

FORMULATION FOR SUSTAINED RELEASE OF A BIOLOGICAL AGENT

John W. Born, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,599
Int. Cl. A61k *27/12*
U.S. Cl. 424—22 2 Claims

A unique formulation for the sustained release of active agent for medication in animals wherein the active agent is released from a solid solution or dispersion of thermoplastic polymer by diffusion or leaching.

3,737,522

ORAL COMPOSITIONS FOR CALCULUS RETARDATION

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 30, 1970, Ser. No. 51,356
Int. Cl. A61k *7/16*
U.S. Cl. 424—49 2 Claims

Oral compositions, such as toothpaste, mouthwash, and the like, containing certain carbonyldiphosphonates as herein defined which retard dental calculus formation without damaging tooth structure.

3,737,523

ANTIBIOTIC COMPLEX MM4462 AND PROCESS PREPARING SAME

Martin Cole, Dorking, and George Newbolt Rolinson, Newdigate, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Aug. 25, 1971, Ser. No. 175,010
Claims priority, application Great Britain, Aug. 29, 1970, 41,694/70
Int. Cl. H61k *21/00*
U.S. Cl. 424—122 2 Claims

Antibiotic complex MM4462 is prepared by cultivating *Fusarium lateritium* or a suitable mutant strain thereof in a nutrient medium containing sources of carbon, nitrogen and mineral salts at a pH of 5–9 under aerobic conditions until sufficient antibiotic complex has been formed in the medium. This complex exhibits insecticidal activity. The complex is characterized by a melting point of 155° C. to 157° C. and on elemental analysis has a carbon content of 62.34% and a hydrogen content of 7.23%. The molecular weight by NMR is 365 and $[\alpha]_D^{19°}$ −39° (c. 1.2% in chloroform). Thin layer chromatography of the complex on silica gel plates gives a violet zone when sprayed with concentrated H_2SO_4. The R_f values in various solvents are given in Table 5 of the specification. When a benzene-methanol thin layer chromatogram was sprayed with $KMnO_4$ in acetone, an orange zone at R_f 0.49 was attained.

3,737,524

MEDICAMENTS DERIVED FROM NUCLEIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Jean Pierre Ebel, Strasbourg, Louis Eugene Marie Colobert, Collonges au Mont d'Or, and Pierre Louisot, Lyons, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,556
Claims priority, application France, Oct. 21, 1969, 6935974
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 9 Claims

Medicaments consisting of or containing chemically modified ribonucleic or deoxyribonucleic acids of human origin. These medicaments may be manufactured by subjecting ribonucleic or deoxyribonucleic acids extracted from tissues of human origin to a chemical reaction under conditions such that the general structure of these acids is not profoundly modified but such that the purine and pyrimidine bases which constitute them undergo modifications. The medicaments are useful for the treatment of a human being having an infection of viral origin.

3,737,525

METHOD FOR CAUSING HEPATITIS IN ANIMALS

Dietrich Keppler, Rainer Lesch, Werner Reutter, and Karl Decker, Freiburg, Germany, assignors to Carl Roth oHG, Karlsruhe, Germany

No Drawing. Filed Sept. 29, 1969, Ser. No. 861,988
Int. Cl. A61k *27/00*
U.S. Ci. 424—180 2 Claims

The administration of D-galactosamine·HCl is found to cause hepatitis in animals. The use thereof in this manner makes it possible to test the therapeutic possibilities of various drugs against human virus hepatitis as well as to research pathogensis and metabolic changes.

3,737,526

ANTIBIOTIC TREATMENT OF FISH DISEASES

Fred K. White, Glen Ellyn, Ill., assignor to Mulwhiteson Development Company, Glen Ellyn, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 879,557, Nov. 24, 1969. This application May 4, 1971, Ser. No. 140,237
Int. Cl. A61k *27/00*
U.S. Cl. 424—181 2 Claims

This invention relates to the use of erythromycin in the treatment of susceptible externally manifested bacterial infections of fish and, more particularly, to the use of a water-soluble salt of erythromycin as an additive to the water environment of fish, either as a profilaxis to prevent or as a positive agent to cure such infections and to reduce shock and stress.

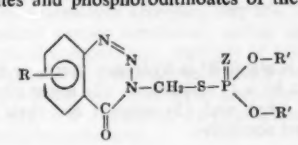
3,737,527

SUBSTITUTED S-((4-OXO - 1,2,3-BENZOTRIAZIN-3(4H) - YL)METHYL) PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES FOR CONTROLLING ARTHROPODS

Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 1, 1969, Ser. No. 812,288, now Patent No. 3,622,578. Divided and this application Mar. 2, 1971, Ser. No. 120,330
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 11 Claims

Alkylthio-, alkylsulfinyl- and alkylsulfonyl-substituted S-((4-oxo - 1,2,3 - benzotriazin-3(4H)-yl)methyl)phosphorothioates and phosphorodithioates of the formula



and methods employing and compositions comprising these substituted phosphorothioates and substituted phosphorodithioates for controlling parasites, especially arthropod pests such as insects and arachnids. In the above and succeeding formulae in the present specification and claims, Z represents oxygen or sulfur; R represents loweralkylthio, loweralkylsulfinyl or loweralkylsulfonyl; and each R' independently represents loweralkyl.

3,737,528

CERTAIN OXIMINO PHOSPHORUS CONTAINING COMPOUNDS USED AS INSECTICIDES AND ACARICIDES

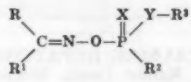
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,150, now Patent No. 3,631,170. Divided and this appplication Jan. 11, 1971, Ser. No. 105,602

Int. Cl. A01n *9/36*

U.S. Cl. 424—203 **2 Claims**

Compounds having the formula:



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R^1 is alkyl; R^2 is alkyl or alkoxy and R^3 is a heterocyclic group, and their use as insecticides and acaricides are disclosed.

3,737,529

CYCLIC O,O - (2,2 - DIMETHYLTRIMETHYLENE) PHOSPHOROCHLORIDOTHIOATE AS AN AGRICULTURAL PESTICIDE

Frank Albert Wagner, Jr., Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,918

Int. Cl. A01n *9/36*

U.S. Cl. 424—209 **4 Claims**

This invention relates to novel methods and insecticidal compositions for controlling a wide variety of insect pests. More particularly, the invention involves the use of cyclic O,O-(2,2-dimethyltrimethylene) phosphorochloridothioate as a contact, systemic or fumigant insecticidal agent.

3,737,530

CERTAIN OXIMINOPHOSPHONODITHIOATES AS INSECTICIDES AND ACARICIDES

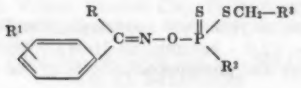
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,151, now Patent No. 3,709,959, dated Jan. 9, 1973. Divided and this application June 12, 1972, Ser. No. 261,877

Int. Cl. A01n *9/36*

U.S. Cl. 424—210 **10 Claims**

Compounds having the formula



in which R is alkyl; R^1 is hydrogen; nitro, or halogen, R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) alkyl, and (5) ethynyl and their use as insecticides and acaricides.

3,737,531

N - DIARYL-PYRIDYL-METHYL-IMIDAZOLES, SALTS THEREOF AS ANTIFUNGAL AGENTS

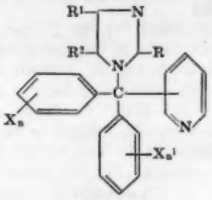
Wilfried Draber, Karlheinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application July 3, 1969, Ser. No. 839,089, now Patent No. 3,629,273, dated Dec. 21, 1971. Divided and this application Feb. 25, 1971, Ser. No. 118,993

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **34 Claims**

N-diaryl-pyridyl-methyl-imidazoles of the formula:



(I)

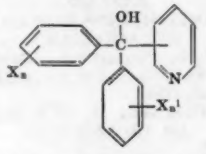
wherein

R, R^1 and R^2 are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,

X is straight or branched chain alkyl of 1 to 12 carbon atoms, straight or branched chain alkenyl of 1 to 12 carbon atoms or an electronegative moiety, and

n and n^1 are each integers from 0 to 2,

or pharmaceutically acceptable non-toxic salts thereof are produced by reacting diaryl-pyridyl carbinols of the formula:



(II)

wherein X, *n* and n^1 are as above defined, in an inert organic solvent with a reagent suitable for chlorination of tertiary alcohols and reacting the diaryl-pyridyl-methyl chloride thus produced with an acid-binding agent and imidazole or lower alkyl imidazole. The salts are obtained by reaction of the compounds with the corresponding acid.

These compounds are useful as antimycotics and should generally be administered in the range of about 20 to 100 mg./kg.

3,737,532

INSECTICIDAL ISOBUTOXY ETHYLPHOSPHONODITHIOATE ESTERS

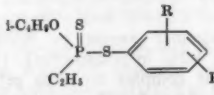
Mervin E. Brokke, Richmond, Julius J. Menn, Saratoga, and Stephen C. Dorman, Los Gatos, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application May 14, 1968, Ser. No. 728,902, now Patent No. 3,642,958, dated Feb. 15, 1972. Divided and this application Dec. 3, 1970, Ser. No. 94,998

Int. Cl. A01n *9/36*

U.S. Cl. 424—222 **2 Claims**

Isobutoxy ethylphosphonodithioates of the formula



wherein R is hydrogen or methyl and R^1 is hydrogen or chlorine. The compounds are useful as insecticides. Representative compounds are isobutoxy-S-phenyl ethylphosphonodithioate, isobutoxy-S-(4-chlorophenyl) ethyl-

phosphonodithioate, isobutoxy-S-(2-methyl-5-chlorophenyl)ethyl phosphonodithioate, and isobutoxy-S-(p-tolyl)-ethyl-phosphonodithioate.

3,737,533

COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING 1' - VARIABLE - 1',1'-DIHALO-HALOBENZENEAZOMETHANES

Malcolm W. Moon and Victor L. Rizzo, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,300
Int. Cl. A01n *9/20*
U.S. Cl. 424—226 **27 Claims**

Some new 1'-variable-1,1'-dihalo-halobenzeneazomethanes have been synthesized and found to be active against arthropod pests, particularly insects and mites. The 1',1'-halogens may be bromine, chlorine, or fluorine, independently. The benzene ring has two and, variably, up to five substituents; for example, halogen atoms (at least one), alkyl groups, alkoxyl groups, and halo-alkyl groups. The 1'-variable group may have as many as 12 carbon atoms. Methods for use in controlling arthropod pests are described. Representative formulations for use as anti-arthropodal agents are also described.

3,737,534

COCCIDIOSTATIC AND GROWTH PROMOTING COMPOSITIONS

Hans Thommen, 29 Dahlienstrasse, Therwil, Switzerland, and Harald Weiser, 5 Dornhagliweg, Arlesheim, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 612,089, Jan. 27, 1967. This application Dec. 11, 1969, Ser. No. 884,332
Int. Cl. A01n *9/16, 9/22*
U.S. Cl. 424—229 **3 Claims**

Composition containing (a) a therapeutically active sulfonamide and (b) a pyrimidine and the use of such composition as a coccidiostat and/or as a growth promoting agent.

3,737,535

METHOD OF FATTENING BEEF CATTLE

John R. Brethour, Experiment Station, Hays, Kans. 67601

No Drawing. Filed Feb. 11, 1971, Ser. No. 114,694
Int. Cl. A61k *27/00*
U.S. Cl. 424—243 **11 Claims**

A method of fattening cattle utilizes a halogenated corticosteroid to increase marbling and improve the eating quality of the meat without increasing general carcass fatness. An acute dosage of 9α-fluoro-16α-methylprednisolone is administered to an animal after the animal has been placed on full feed and sufficiently in advance of slaughter to assure adequate time for intramuscular adipose tissue development.

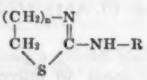
3,737,536

ANAESTHETIC COMPOSITIONS FOR AND USE IN ANIMALS

Gerhard Sagner, Wuppertal-Vohwinkel, and Otto Behner, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 6, 1970, Ser. No. 812,904, now Patent No. 3,651,053. Divided and this application June 15, 1971, Ser. No. 153,415
Claims priority, application Germany, Apr. 27, 1968, P 17 67 335.7
Int. Cl. A61k *27/00*
U.S. Cl. 424—246 **9 Claims**

Anaesthetic veterinary compositions comprising a compound of the formula:



wherein

R is phenyl, mono or di-substituted by lower alkyl, lower alkoxy, lower alkylthio or halogeno and
n has a value of 1 or 2

or a physiologically compatible acid additional salt thereof and a physiologically acceptable non-toxic, inert diluent or carrier therefor, and the method of utilizing these compounds in effecting anaesthesia are provided. A typical embodiment is an anaesthetic veterinary composition utilizing 2-(2,6-dimethylphenylamino) - 5,6 - dihydro-4H-1,3-thiazine hydrochloride.

3,737,537

SYNERGISTIC MIXTURE OF DRUGS

Jack Hayden, 91 Dewent Drive, Maidenhead, England, and William Stewart Ogden, The Tithing, Copthall Lane, Chalfont St. Peter, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 745,969, July 19, 1968. This application June 8, 1971, Ser. No. 151,144
Claims priority, application Great Britain, July 25, 1967, 34,124/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—247 **8 Claims**

Synergistic mixtures of 3-methylpent-1-yn-3-ol carbamate and promethazine in a ratio by weight of carbamate to promethazine of between 4:1 and 16:1 are useful as hypnotics.

3,737,538

ANTITUSSIVE COMPOSITIONS AND METHOD WITH ISONIPECOTIC ACID DERIVATIVES

Hans Herbert Kuhnis and Rolf Denss, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 30, 1968, Ser. No. 788,068, now Patent No. 3,586,678. Divided and this application Oct. 23, 1970, Ser. No. 83,625
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **6 Claims**

1-phenylalkyl-isonipecotic acid amides substituted in 4-position by allyl or propinyl as well as the pharmaceutically acceptable acid addition salts thereof are antitussive agents. Pharmaceutical compositions containing these compounds and methods for producing an antitussive effect in mammals comprising administering such compounds are provided. An illustrative embodiment is 1-(3-phenylpropyl)-4-allyl-isonipecotic acid morpholide.

3,737,539

SUBSTITUTED BENZOFURANOLS IN ANALGETIC AND ANTI-SPASMODIC COMPOSITIONS

Knut A. Jaeggi, General Guisan Strasse 44, Basel, Switzerland, and Ulrich Renner, Talweg 31, Riehen, near Basel, Switzerland

No Drawing. Original application Sept. 2, 1969, Ser. No. 854,745, now Patent No. 3,634,421, dated Jan. 11, 1972. Divided and this application Jan. 28, 1971, Ser. No. 110,643
Claims priority, application Switzerland, July 16, 1969, 10,832/69
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **7 Claims**

The compounds are of the class of N-substituted 2-(p-alkoxybenzyl)-5-chloro - 3 - (2-aminoethyl)-2,3-dihydro-3-benzofuranols and the pharmaceutically acceptable acid addition salts thereof and have analgesic, antitussive and musculotrop-spasmolytic activities; they are, together with pharmaceutical carrier substances, active ingredients of pharmaceutical compositions; methods of alleviating pain in a mammal and of treating spastic conditions in a mammal are provided; an illustrative embodiment is 2-(p-ethoxybenzyl) - 5 - chloro-3-[2-(diethylamino)-ethyl]-2,3-dihydro-3-benzofuranol.

3,737,540

COMPOSITION FOR SUPPRESSING THE TREMOR OF PARKINSON'S SYNDROME

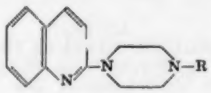
Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,237

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 6 Claims

The tremor of Parkinson's syndrome in mammals is suppressed by the administration of a composition comprising (1) a compound of the formula



in which R is either H or CH_3, and nontoxic pharmacologically acceptable acid addition salts thereof, and (2) L-3,4-dihydroxyphenylalanine.

3,737,541

METHODS FOR THE TREATMENT OF PARKINSONISM

Hans Rudolf Corrodi, Askim, and Kjell Gunnar Fuxe, Sollentuna, Sweden, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Soresues, France

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,125

Claims priority, application Sweden, Apr. 14, 1971, 4,803/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 5 Claims

Pharmaceutical compositions containing 1-(2-pyrimidyl) 4-(3,4-methylenedioxybenzyl) piperazine or a therapeutically acceptable salt thereof and a method for treating of parkinsonism by using the same, are described.

3,737,542

LOWERING EXCESSIVE SERUM LIPID CONCENTRATIONS AND PREPARATIONS CONTAINING FLUORO-PYRIDINE DERIVATIVES

Lars Anders Fritz Carlsson, Forfattarvagen 27, Bromma, Sweden; Åke John Erik Helgstrand, Baverstigen 32, Enhorna, Sweden; and Berndt Olof Harald Sjoberg, Kummelvagen 24; and Nils Erik Stjernstrom, Tappgatan 9, both of Sodertalje, Sweden

No Drawing. Continuation-in-part of application Ser. No. 689,751, Nov. 15, 1967, now Patent No. 3,637,714.

This application Aug. 20, 1971, Ser. No. 173,678

Claims priority, application Sweden, Nov. 16, 1966, 15,717/66

Int. Cl. A01n *9/22*; A61k *15/12*

U.S. Cl. 424—263 15 Claims

A method of lowering excessive lipid and free fatty acid concentration in serum of animals, including man, comprises administering a composition containing as the active ingredient a therapeutically effective dose of at least one compound selected from the group consisting of pyridine derivatives of the general formula

and therapeutically acceptable salts thereof. The active ingredients exhibit vasodilating properties. Pharmaceutical preparations containing the pyridine derivatives as active ingredients are also disclosed.

3,737,543

ECTOPARASITICIDALLY ACTIVE 2-ARYLAMINO-1-ALKYL LACTAMS

Edgar Enders, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

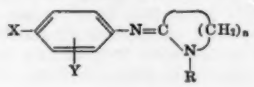
No Drawing. Filed Oct. 19, 1970, Ser. No. 81,983

Claims priority, application Germany, Nov. 3, 1969, P 19 55,072.2

Int. Cl. A01n *9/00*

U.S. Cl. 424—267 8 Claims

Compositions and methods of using certain 2-arylimino-1-alkyl lactams of the formula



(I)

in which

one of X and Y is halogen and the other is halogen or lower alkyl,

R is alkyl or alkenyl with up to 6 carbon atoms, and

n is 4 or 5, which possess strong parasiticidal properties, especially animal acarid ectoparasiticidal properties.

3,737,544

COMPOSITIONS AND METHODS UTILIZING 2,5-DIMETHYL - 1,3,4,9b-TETRAHYDO - 2H - INDENO [1,2-c]PYRIDINE

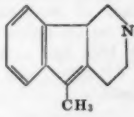
Ernst Jucker, Ettingen, Anton Ebnother, Arlesheim, and Jean-Michel Bastian, Birsfelden, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Original application May 13, 1969, Ser. No. 824,274, now Patent No. 3,574,686. Divided and this application Dec. 9, 1970, Ser. No. 96,642

Int. Cl. A61n *27/00*

U.S. Cl. 424—263 5 Claims

The invention concerns 2,5 - dimethyl - 1,3,4,9b - tetrahydro-2H-indeno[1,2c]pyridine of the formula:



and acid addition salts thereof. Processes for the production of the above compounds are also described.

The compounds are useful sedative-neuroleptics.

3,737,545

α-AMINOBENZYL PENICILLINS

Charles Riffkin, Edison, Carl B. Rifino, Lakewood, and Gilman N. Cyr, Piscataway, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Original application June 6, 1969, Ser. No. 831,225. Divided and this application Feb. 22, 1972, Ser. No. 228,324

Int. Cl. A61k *21/00*

U.S. Cl. 424—271 8 Claims

Ampicillin trihydrate having a particle size range from about 5 microns to about 50 microns may be used to

form suspensions which are stable, non-irritating, longer-acting, and may be administered in more highly concentrated form.

3,737,546

USE OF IPRONIDAZOLE IN COMBATTING SWINE DYSENTERY

Robert Earl Messersmith, Trenton, and Raffaele Amici Roncalli, Glen Ridge, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,398

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **6 Claims**

The use of ipronidazole and its water-soluble pharmaceutically acceptable acid addition salts in the oral and the parenteral treatment and prevention of swine dysentery is described.

3,737,547

ANTIPARASITIC COMPOSITION CONTAINING NITROIMIDAZOLE DERIVATIVES USEFUL IN THE TREATMENT OF POULTRY

John A. Carlson, Nassau, N.Y., Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Sept. 5, 1960, Ser. No. 855,765, which is a continuation-in-part of abandoned application Ser. No. 550,932, May 18, 1966, which in turn is a continuation-in-part of abandoned application Ser. No. 470,239, July 7, 1965. Divided and this application Nov. 12, 1971, Ser. No. 198,417

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **6 Claims**

Antiparasitic compositions containing as the active ingredient, 1 - substituted - 5-nitroimidazol-2-yl-alkyl carbamates and acid addition salts thereof are provided. The compounds are prepared from 1-substituted - 5 - nitroimidazoles having at the 2-position of the imidazole ring an hydroxyalkyl, mercaptoalkyl, alkylsulfonyloxyalkyl, alkarylsulfonyloxyalkyl, haloalkyl, halocarbonylalkyl or halothiocarbonyloxyalkyl radical. The compositions are useful against enterohepatitis and PPLO infections, and are primarily valuable against diseases of the domestic fowl. Poultry feed compositions containing the active compounds are also provided.

3,737,548

N-SUBSTITUTED IMIDAZOLES AND THEIR SALTS AS ANTIFUNGAL AGENTS

Wilfried Draber, Karl Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 12, 1969, Ser. No. 876,033, now Patent No. 3,647,816. Divided and this application July 9, 1971, Ser. No. 161,270

Claims priority, application Germany, Nov. 29, 1968, P 18 11 654.6

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **22 Claims**

Certain N-substituted imidazoles and their salts having fungistatic properties are provided represented by 9-(4-fluorophenyl)-9-imidazolyl-thioxanthene. Typical fungi are Trichophyton species, Microsporon species, Candida species and Penicillium species. The compounds are also active against pathogenic protozoa, viruses and bacteria.

3,737,549

METHOD OF TREATING DEPRESSION

Nicholas Peter Plotnikoff, Village of Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,180

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **1 Claim**

An improved method of treating depression using thyrotropin releasing agent or L-pyroglutamyl-L-histidyl-L-prolinamide as the anti-depressant agent.

3,737,550

A METHOD FOR TREATING INFLUENZA VIRAL INFECTIONS

Mary A. Nook; Harold E. Renis, both of Kalamazoo, and Gerald E. Underwood, Galesburg, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 884,316, Dec. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 653,040, July 13, 1967, abandoned. This application Oct. 28, 1971, Ser. No. 193,566

Int. Cl. A61k *27/00*

U.S. Cl. 424—279 **5 Claims**

Pharmaceutical preparations supplying a non-toxic anti-influenza effective amount of a member selected from the group consisting of elenolide, elenolic acid, alkali metal salts of elenolic acid, alkaline earth metal salts of elenolic acid, iron elenolate, zinc elenolate, lower alkyl esters of elenolic acid, lower alkyl acetals of elenolic acid and lower alkyl acetal esters of elenolic acid are used intranasally for treating influenza in a mammal. The above active ingredients are used locally or topically for the treatment of influenza in an infected mammal.

3,737,551

WETTABLE AND DISPERSIBLE POWDERS

Kenneth S. Karsten, Westport, and Charles Edward Bradley, Jr., Weston, Conn., assignors to R. T. Vanderbilt Company, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 717,368, Mar. 29, 1968, which is a continuation-in-part of application 628,277, Apr. 4, 1967. This application Aug. 20, 1969, Ser. No. 851,738

Int. Cl. A01n *9/12, 9/20, 9/22*

U.S. Cl. 424—286 **6 Claims**

A wettable and dispersible powder of a water-insoluble solid is produced by admixing a moist cake of the solid with a dispersing agent and a wetting agent to produce a pumpable slurry of finely divided solid in water, and thereafter drying the slurry. The dried product, when added to water, rapidly forms dispersion of finely divided particles which can be stored with greatly reduced tendency toward settling and, if settling occurs after extended storage, can be redispersed easily with agitation. When drying is effected by spray drying there is obtained a free-flowing product composed of generally spherical agglomerates of the finely divided solid. The invention is of particular utility for providing very high assay wettable biocide powders which can be applied as a spray.

3,737,552

METHOD OF TREATING GONORRHEA

Harry W. Gordon, Bronx, and Paul B. Wasserstein, Flushing, N.Y., assignors to Julius Schmid, Inc., New York, N.Y.

No Drawing. Filed July 22, 1971, Ser. No. 165,330

Int. Cl. H61k *27/00*

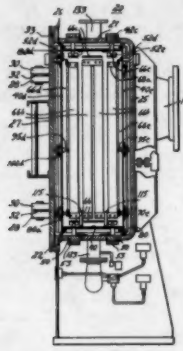
U.S. Cl. 424—313 **9 Claims**

A method of treating gonorrhea is described which comprises administering to a human either locally or orally an effective amount of a salt of dioctyl sulfosuccinate.

3,737,553
VACUUM ELECTRIC FURNACE

Benjamin A. Kreider, Richboro; William R. Jones, Chalfont; William J. Metalsky, Warminster, and Thomson B. Gibb, Warrington, all of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Dec. 9, 1971, Ser. No. 206,383
Int. Cl. H05b *3/10*
U.S. Cl. 13—25 **12 Claims**

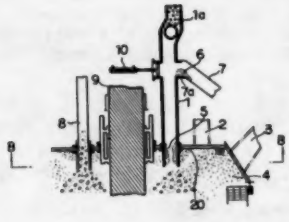


An electric furnace is disclosed for operation at vacuum with or without inert gas with an external water cooled enclosure having an access door and within which enclosure large areas low mass quick heating resistance elements are provided for the back and front, sides, top and bottom with independent control of the heating elements, programmed if desired, the heating units being shielded to minimize heat loss outside the enclosure by low mass shielding elements including a baffle in one wall which permits rapid gas exit for fast pump down to obtain a fast cycle time while limiting external thermal radiation losses from the shielded area.

3,737,554
ELECTRIC SMELTING FURNACE OF CLOSED-TYPE HAVING DUST REMOVING MEANS FIXED TO EXHAUST GAS VENT PIPES THEREOF

Koichi Horibe; Tsunenobu Yosida; Tokuji Machida; Shoji Kaneko, and Tomoyuki Sato, all of Arai-shi, Niigata-ken, Japan, assignors to Tanabe Kakoki Co., Ltd., Niigata-ken, Japan

Filed Apr. 11, 1972, Ser. No. 242,976
Claims priority, application Japan, Apr. 14, 1971, 46/23566
Int. Cl. H05b
U.S. Cl. 13—33 **4 Claims**

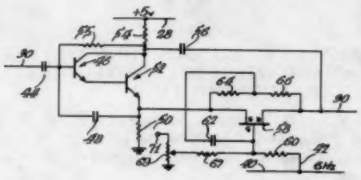


A closed-type electric furnace to be used for extremely high temperature smelting of a ferroalloy such as metallic silicon or 70 percent ferrosilicon. The furnace has at least two dual service pipes, each of which functions as a raw material charging chute and concurrently as an exhaust gas vent pipe with the aid of its branch pipe, and a plural number of single raw material charging chutes through the furnace lid, whereby each dual service pipe has an automatic dust removing machine at the forked position thereof.

3,737,555
ELECTRICAL MUSICAL INSTRUMENT PHASE SHIFT VIBRATO SYSTEM

Robert G. Mathias, Brookfield, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed July 3, 1972, Ser. No. 268,696
Int. Cl. G10h *1/02, 1/04*
U.S. Cl. 84—1.25 **3 Claims**

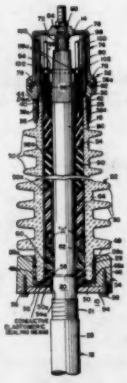


A vibrato or similar system for musical instruments which has successive phase shift stages in which the degree of phase shift is variable depending upon an input variable modulating voltage at a vibrato frequency. Each of the phase shift stages makes use of a field effect transistor as a variable resistance element and includes a circuit feature which solves the problem of intermodulation distortion normally encountered in such circuits.

3,737,556
CABLE TERMINATION APPARATUS WITH RIGID STRESS RELIEF ASSEMBLY AND CONDUCTIVE SEAL

Francis V. Cunningham, Western Springs, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Jan. 21, 1972, Ser. No. 219,800
Int. Cl. H02g *15/22*
U.S. Cl. 174—19 **22 Claims**



A termination or splice apparatus for use with insulated power cable comprising a rigid housing having an elongated

bore for receiving a terminal end portion of the cable, and a conducting elastomeric sealing means at one end of the bore. An integral stress relief assembly includes a preformed cone of rigid conducting material and an insulating section, and is seated in the bore adjacent said sealing means and extends toward the opposite end for a distance substantially less than the total length of the bore. The remaining portion of the bore is filled with dielectric insulating fluid and a load-bearing insulation system that exerts compression through said stress cone and insulating section against said sealing means to provide continuously sealing engagement at said one end of the bore around the cable through a wide range of temperature variations.

3,737,557

ELECTRIC CABLES WITH ETHYLENE-PROPYLENE INSULATION

Stefan Verne, London, and Thomas Geoffrey Heggs, Welwyn, both of England, assignors to British Insulated Callender & Cables, Limited, London, England

Division of Ser. No. 70,987, Sept. 10, 1970. This application June 27, 1972, Ser. No. 266,726

Int. Cl. H01b 7/28

U.S. Cl. 174—23 R **8 Claims**

An electric cable comprises at least one insulated conductor enclosed in a sheath of a polymeric composition which comprises a polymerized propylene sequence and a propylene/ethylene copolymer sequence, has a melt index (230°C; 2.16 kgms) of 0.01 to 0.5, preferably 0.025 to 0.25 and an ethylene content in the range 10–30 percent by weight, preferably at least 15 percent by weight. The conductor can be insulated with the same polymeric composition as is used for the sheath. The cable may also include a dielectric screen material which is the polymeric composition containing 20–40 percent by weight of carbon black.

3,737,558

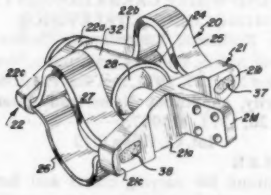
EXPANSION ACCOMMODATING CONNECTOR FOR TUBULAR BUS BARS

James J. Seaquist, Birmingham, Ala., assignor to Anderson Electric Corporation, Leeds, Ala.

Filed Mar. 13, 1972, Ser. No. 234,258

Int. Cl. H02g 15/08

U.S. Cl. 174—86 **10 Claims**



A first fitting has a guide member receivable in an end portion of a tubular bus bar securable in a second fitting. Each fitting is provided with a pair of opposed flanges or connecting strap anchoring portions disposed radially outwardly of an installed tubular bus bar. The fittings are electrically interconnected by two pairs of flexible laminated connecting straps. Between the end portions, the straps of each pair are double-reversely curved oppositely to each other, and each strap of each pair is edgewise aligned with a corresponding strap of the other pair on an opposite side of an installed tubular bus bar. The first fitting may be provided either with a flat platform portion for bolting a flat bus bar thereto, or with a cylindrically recessed portion for welding a tubular bus bar thereto. The second fitting may be a single piece weldable to a tubular bus bar extending therethrough for engagement with the guide member on the first fitting, or it may be two pieces between which a tubular bus bar may be securely clamped.

3,737,559

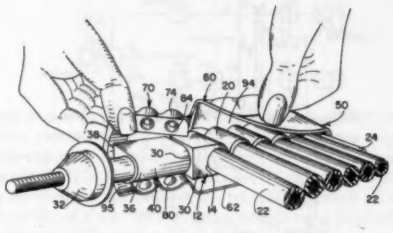
INSULATING COVER FOR ELECTRICAL CONNECTORS

James Joseph Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,730

Int. Cl. H01r 13/44, 13/48

U.S. Cl. 174—138 F **3 Claims**



A formed electrically insulating cover which covers all exposed electrical surfaces of a connector. The insulating cover is formed or molded to conform generally to the outer contours of the connector being covered. A skirt depends from the main body of the cover to enclose an open area providing exit space for conductors extending from the connector, the skirt having sufficient length to cover exposed or stripped portions of the conductors. Inherent snap-fastening members are provided in the skirt to fit about one end of the connector and lock the cover thereto.

3,737,560

CLAMP-TOP TYPE INSULATOR

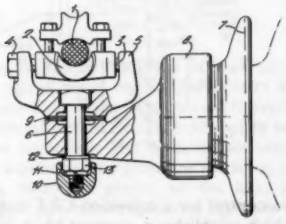
Toshimitsu Takatori; Katsuro Shinoda, and Yasuyuki Tsuboi, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya City, Japan

Filed Mar. 27, 1972, Ser. No. 238,482

Claims priority, application Japan, Sept. 17, 1971, 46/84092

Int. Cl. H01b 17/16

U.S. Cl. 174—158 R **7 Claims**



A clamp-top type insulator comprising an insulating body, a bracket cap secured at the free end of the insulating body, a clamp support mounted on the bracket cap by a hinge bolt in a manner rotatable horizontally, and a clamp for holding a line conductor mounted onto the clamp support by means of a

projection and a fastening bolt in a manner rotatable vertically. The clamp-top type insulator according to the present invention saves fatigue of the line conductor and mitigates implication of an excessive irregular bending stress to the insulator.

3,737,561

SIGNAL PROCESSING ARRANGEMENT FOR A COLOR TELEVISION CAMERA CIRCUIT

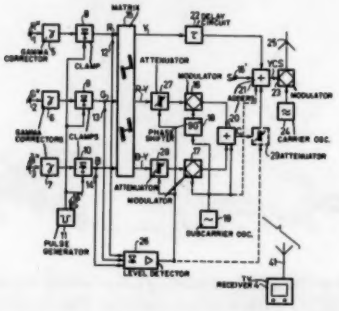
Dirk Boer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,522

Claims priority, application Netherlands, June 27, 1970, 7009523

Int. Cl. H04n 9/48, 9/53

U.S. Cl. 178—5.4 R **8 Claims**



A signal handling arrangement for a color television camera circuit for avoiding discolorations in dark areas upon the display of a scene. Three gamma-corrected color signals R, G and B are applied to a minimum threshold level detection circuit, so that when they jointly exceed this level a control signal is provided to a color information attenuator which is formed in an adjustable manner.

3,737,562

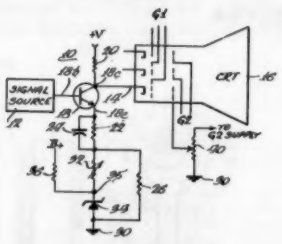
TELEVISION DRIVE CONTROL CIRCUIT

Lester Tucker Matzek, Lombard, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 18, 1971, Ser. No. 125,565

Int. Cl. H04n 9/18, 9/48

U.S. Cl. 178—5.4 R **22 Claims**



A drive control for a television CRT includes a reference circuit which establishes a constant black level drive current regardless of the adjustment of a variable resistor which controls the gain of a drive stage. A set-up switch when actuated establishes the same constant black level drive current so that the grid bias of the CRT can be adjusted to set a black level on the CRT screen. When used in a color television receiver, the reference circuit may include a single adjustable control for varying the relative red/blue drive. An automatic color temperature control activated by the color killer interconnects the red and green color drive channels to the reference circuit to change the screen color temperature without changing the black level.

3,737,563

COLOR TELEVISION RECEIVER

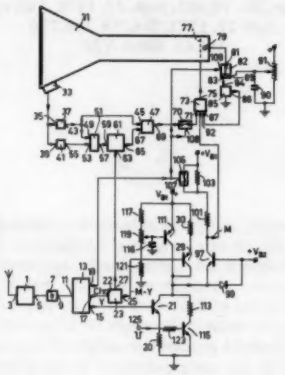
Peter Ketelaar, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,393

Claims priority, application Netherlands, July 28, 1970, 7011112

Int. Cl. H04n 9/16

U.S. Cl. 178—5.4 R **4 Claims**



A color television receiver including a display tube of the indexing type in which an increased contrast in case of monochrome display is obtained by changing the amplification of a luminance signal channel and optionally by reduction of the background luminance with the aid of a color killing circuit.

3,737,564

CONTROL CIRCUIT FOR VARYING AND FOR COLOR AND BLACK-AND-WHITE GRADATIONS IN COLOR AND MONOCHROME TELEVISION

Anne Hendrik Bruinsma, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,136

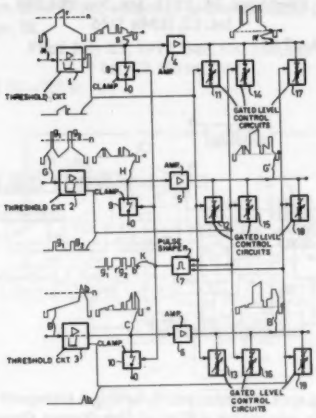
Claims priority, application Netherlands, Mar. 25, 1970, 7004340; Jan. 26, 1971, 7100973

Int. Cl. H04n 9/12

U.S. Cl. 178—5.4 R **10 Claims**

A control circuit for varying colors and for colors and black-and-white gradations in color and monochrome television, particularly for color television in which in a reproduction of the picked-up scene having certain colored parts or regions, differently colored regions may be adjusted optionally. When a chrominance signal exceeds a threshold level, clamping pulses are derived from each of the three channels, The clamping pulses of each channel are applied to all three video channels for black level introduction. Subsequently, a plurality of gated level control circuits follow in each video channel which circuits are divided into groups of three in these chan-

nels. Each group of gated level control circuits divided in the three channels is activated in cooperation with the clamping



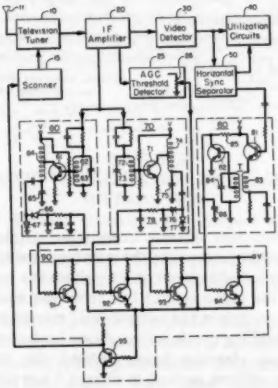
pulses which are derived from one or more video channels so as to introduce optionally color information.

3,737,565

SIGNAL DETECTOR FOR A SIGNAL-SEEKING TUNING SYSTEM

John Y. Ma, Glenview, and Fredrick Zlotnick, Addison, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,664
Int. Cl. H04n *5/50*
U.S. Cl. 178—5.8 **2 Claims**



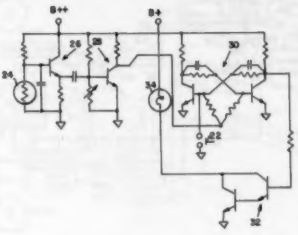
A signal detector for a signal-seeking television tuner system which renders the system unresponsive to image signals by detecting the audio subcarrier, video subcarrier, and horizontal sync signals and applying them to a coincidence gate to provide a recognition signal only in response to the reception of a proper RF television signal. Detection of a fourth signal parameter, magnitude, enables the system to reject proper RF television signals too weak for satisfactory viewing.

3,737,566

TELEVISION CODER AND DECODER

Ralph H. Baer, Manchester, and William T. Rusch, Hollis, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 852,349, Aug. 22, 1969, abandoned, which is a division of Ser. No. 697,798, Jan. 15, 1968, abandoned. This application Dec. 8, 1970, Ser. No. 96,033
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.8 R **8 Claims**



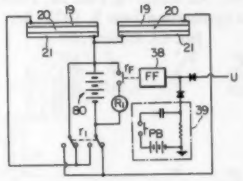
Apparatus is herein disclosed for use in conjunction with television receivers for presenting coded messages displayed on a television screen and for decoding same by the selection of a particular displayed coded symbol. The coder comprises means for flashing symbols on the television screen an odd or even number of times. The decoder comprises a multivibrator responsive to said coded symbol.

3,737,567

STEREOSCOPIC APPARATUS HAVING LIQUID CRYSTAL FILTER VIEWER

Shunsei Kratomi, No. 456, Maegawa, Kanagawa-ken, Odawara-shi, Japan

Filed Feb. 28, 1972, Ser. No. 229,966
Claims priority, application Japan, Oct. 25, 1971, 46/83947; Nov. 17, 1971, 46/91528; Nov. 24, 1971, 46/93706; Jan. 11, 1972, 47/4957
Int. Cl. G03b *35/16, 35/24;* **H04n** *9/58*
U.S. Cl. 178—6.5 **38 Claims**

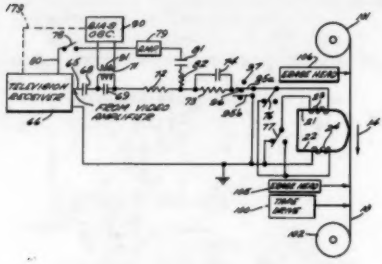


A stereoscopic apparatus comprises at least one viewing device having a pair of liquid crystal filters (worn by an observer), the transparency of the liquid crystal filters being dependent on the intensity of an electric field applied thereto; at least one viewer controller; and a stereopair reproducing means, such as a motion picture projector and screen, a television receiver, a videotape player, or the like, having a synchronizing signal generator to generate signals to be transmitted to said viewer controller operating said viewer in such manner that a pair of liquid crystal filters, covering the right and the left eyes respectively, alternately exchange transparency and translucency in synchronism with each other, the alternation of right-eyed pictures and left-eyed pictures of stereopairs being displayed by the stereopair reproducing means.

3,737,568
VIDEO RECORDING SYSTEM

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Division of Ser. No. 344,075, Feb. 11, 1964. This application Dec. 13, 1971, Ser. No. 207,439
Int. Cl. G11b 5/20, 5/44; H04n 5/78
U.S. Cl. 178—6.6 A 3 Claims

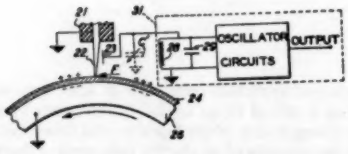


In the disclosed embodiments the video signal is recorded on successive longitudinal tracks with high frequency bias. The sound may be recorded transversely on adjacent tracks or may be recorded with the video as pulse modulation in the horizontal blanking intervals. The video bias frequency is selected so as to avoid beat notes with the video signal. The horizontal and vertical sync signals may be amplified separate from the composite video and then added thereto so as to record sync signals of increased amplitude. The picture signal from a television receiver may be recorded without further amplification.

3,737,569
TRANSMISSION DEVICE

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 802,370, Feb. 26, 1969, Pat. No. 3,638,110. This application June 9, 1971, Ser. No. 151,405
Int. Cl. H04n 1/04
U.S. Cl. 178—7.1 4 Claims

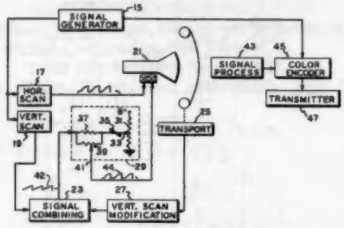


A transducer applying the Johnsen-Rahbek effect wherein the frictional force between two electrodes separated by electrostatically chargeable material is augmented by an increase in potential applied to the electrodes. The transducer measures or reads out the potential or charge patterns on the electrostatically chargeable material which may be a semiconductor, dielectric or other charge carrying surface and converts the force variations into electrical signals.

3,737,570
LINEARITY CORRECTION APPARATUS IN A FLYING SPOT SCANNER SYSTEM

Robert Roy Eckenbrecht, East Bethany, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 21, 1971, Ser. No. 182,381
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 6 Claims

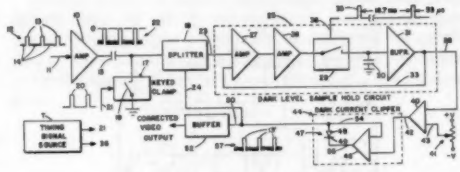


In a flying spot scanner system having a transport means for continuously advancing a film of film frames through a film scanning zone and a light detector responsive to a light source vertically scanning the curved face plate of a cathode ray tube, linearity apparatus for altering the vertical scanning of the light source in a manner to effect linear scanning of a film frame.

3,737,571
AUTOMATIC DARK CURRENT CONTROL

Rolf Gaebele, Redwood City, and Armand Gambera, Cupertino, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed May 12, 1971, Ser. No. 142,482
Int. Cl. H04n 5/16
U.S. Cl. 178—7.2 2 Claims

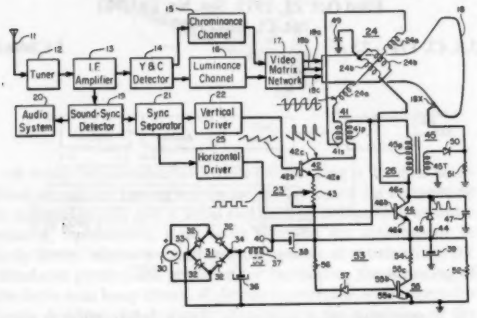


An automatic dark current control for a television (TV) camera or the like comprises the combination of a dark current level sample-hold circuit and a unique low level clipper in parallel with the video output line from the camera vidicon. An electronic switch in the sample-hold circuit is closed once during each field for the duration of one horizontal line sweep of the vidicon electron beam behind the mask on the photosensitive vidicon surface to charge a capacitor to a level corresponding to the dark current present during that line interval. A signal proportional to the charge on the capacitor is applied to a dark current level adjusting circuit which measures the difference in actual dark current over a predetermined value during the one field. The difference or control signal is applied to a clipper circuit comprising a high gain differential amplifier and a diode switch connected across the input and output of the differential amplifier as well as the video output line. The clipper operates effectively on millivolt differences between control and video signals to automatically limit the dark current in the output signal to the preset level.

3,737,572
SERIES-CONNECTED POWER SUPPLY AND DEFLECTION CIRCUITS UTILIZING A SINGLE SHUNT REGULATOR

Kenneth Frizane, Elmwood Park, and William A. Trzyna, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed July 23, 1971, Ser. No. 165,549
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 R **3 Claims**



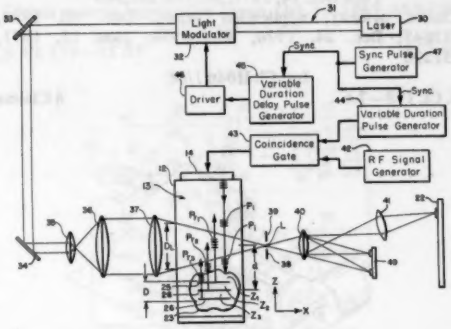
A voltage regulating arrangement in a television receiver for simultaneously regulating the low-voltage power supply and the horizontal deflection system with a single regulator circuit. The regulating arrangement utilizes the horizontal output transformer primary winding as a brightness-dependent variable impedance which, together with the low-voltage (24-volt) power supply load, forms a voltage dividing network between the high-voltage (B+) power supply and ground. A single shunt regulator is coupled across the low-voltage power supply load to insure that a constant potential is maintained at the junction of the variable impedance and the 24-volt load. The 24-volt load and its associated shunt regulator further combine to provide load regulation of the horizontal deflection system by presenting an impedance which varies in a directly proportional manner with impedance variations of the horizontal output transformer primary winding to maintain a relatively constant voltage thereacross.

3,737,573
ULTRASONIC VISUALIZATION BY PULSED BRAGG DIFFRACTION

Lawrence W. Kessler, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 30, 1971, Ser. No. 175,954
Int. Cl. G01n *23/20, 29/00*; **G01b** *17/00*
U.S. Cl. 178—7.5 D **10 Claims**

An improvement in reflection mode Bragg display systems of the type wherein an acoustic beam is incident on an object which by reflection spatially modulates this sound field with its image information, a laser light beam interacts with such modulated sound field to undergo Bragg diffraction, thereby reproducing the image information in the diffracted light, and an optical system receiving such diffracted light images various desired cross sections of the object with a discrimination limited by the overall depth of focus of the optical imaging system. Control means are incorporated for delivering both the acoustic beam and the light beam in synchronized bursts of controlled duration to allow any of a plurality of cross-section within the acoustic depth of focus to be visualized, and spurious acoustic images eliminated, with a discrimination depth dependent on the duration of the acoustic burst. The light burst is delayed with respect to the initiation of the sound burst, and its duration limited, so as together to insure proper

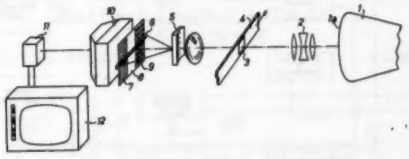


coincidence of the light with the sound energy reflected from the particular object plane selected for imaging.

3,737,574
SYSTEM FOR REPRODUCING COLOR IMAGES

Richard Wick, Munich; Friedrich Bestenreiner, Grunwald; Reinhold Deml, and Josef Helmberger, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 14, 1971, Ser. No. 162,341
Claims priority, application Germany, July 18, 1970, P 20 35 821.8
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.2 R **22 Claims**



Frames on a color motion picture film are scanned point-by-point along scanning lines for reproduction on a color television receiver. The modulated light beam resulting from the scan is expanded optically to extend across three filter strips of red, green, and blue, respectively. At least two of the filter strips have grating lines running perpendicular to the direction of the scanning lines, the distance between grating lines on the first filter strip differing from the distance between grating lines on the second filter strip. A single photoelectric transducer means receive the signals from all filter strips. The output of the photoelectric transducer is converted into a standard television signal for reproduction on a television receiver.

3,737,575
FACSIMILE SCANNING APPARATUS

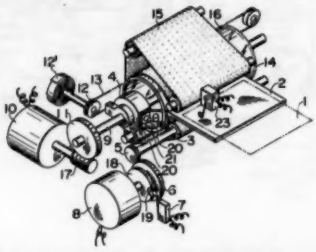
Takuji Kominami, Ota-ku, Tokyo, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Dec. 14, 1971, Ser. No. 207,865

Claims priority, application Japan, Dec. 16, 1970, 45/13845; Dec. 24, 1970, 45/130356; June 15, 1971, 46/51298

Int. Cl. H04n 1/08

U.S. Cl. 178—7.6 **6 Claims**



In a facsimile system, a scanning is provided in which an original or a recording paper fed in a flat form is wound around the outer periphery of a transparent cylinder by the rotation of an endless belt so that the original or the recording paper is scanned from inside the transparent cylinder by means of a scanning slider.

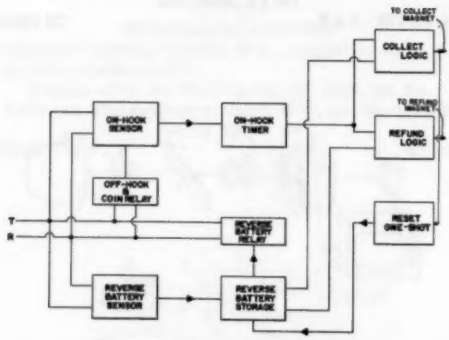
3,737,576
ON-PREMISE PAYSTATION ADAPTER

Lucian W. Spencer, Dallas, Tex., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Feb. 18, 1970, Ser. No. 12,236

Int. Cl. H04m 17/02

U.S. Cl. 179—6.3 R **16 Claims**



The herein-disclosed On-Premise Paystation Adapter consists of three basic circuits: a three-tone audio frequency receiver; an adapter circuit to sense the telephone line condition; and an appropriate ac power supply to provide certain needed dc voltages. One basic feature of the instant adapter is that it is housed along with the telephone paystation itself, and the basic circuitry for the paystation conversion is at the location of the pay phone; thereby eliminating costly central office control equipment. The adapter portion of the On-Premise Paystation Adapter combines a pay telephone with two means, namely, a means for seizing a talking path from that paystation to a remote central office upon rendering the paystation to an "off-hook" condition; and, a means electrically connected to the last-mentioned means, also responsive to an "off-hook" condition that electrically bridges the seized talking path with a means to prevent dial pulses from being transmitted to the central office over the talking pair until a predetermined number of coins have been deposited.

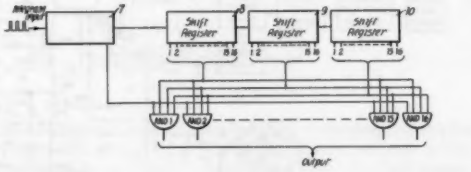
3,737,577
COMMUNICATION SYSTEMS FOR RECEIVING AND CHECKING REPEATEDLY TRANSMITTED MULTI-DIGITAL TELEGRAMS

Michael Sambrook Birkin, Derby, England, assignor to British Railways Board, London, England

Filed Oct. 22, 1971, Ser. No. 191,701

Int. Cl. H04l 1/08

U.S. Cl. 178—23 A **5 Claims**



In a communication system in which information is conveyed as a repeatedly transmitted digital telegram, telegram checking equipment is provided at a receiving station. The checking equipment comprises a plurality of serially connected shift registers each having a number of stages with respective outputs corresponding to the number of information bits of the track telegram so that the information content of one telegram transmission in one shift register is checked against the information content of a sequentially transmitted telegram in another shift register. Logic circuitry is provided to ensure that if the information contents of sequentially transmitted telegrams do not check correctly a telegram is not allowed to pass beyond the checking equipment.

3,737,578
PHASE SYNCHRONIZING CIRCUIT

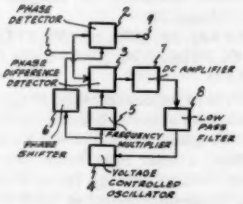
Yoshio Matsuo, c/o Nippon Electric Co., Ltd., 7-15, Shiba Gochome, Minato-ku, Tokyo, Japan

Filed June 12, 1969, Ser. No. 832,711

Claims priority, application Japan, June 29, 1968, 43/45467; Nov. 19, 1968, 43/84390

Int. Cl. H04l 27/18

U.S. Cl. 178—67 **7 Claims**



A phase synchronizing circuit comprises a voltage-controlled oscillator and a frequency multiplier for multiplying the output frequency of the oscillator by a factor corresponding to the number of phases in the input signal. A phase-difference detector receives both the input signal and the multipled frequency output and produces a d.c. signal representing the number of phases in the input signal.

3,737,579

BODY TISSUE ELECTRODE AND DEVICE FOR SCREWING THE ELECTRODE INTO BODY TISSUE

Lee R. Bolduc, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 19, 1971, Ser. No. 135,277
Int. Cl. A61n 1/04
U.S. Cl. 128—418 10 Claims

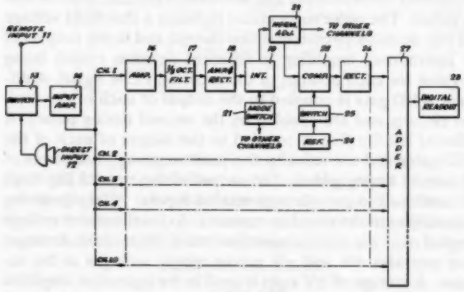
A body implantable electrode comprising a flexible insulated conductor having a proximal end adapted for connection to a power supply and a distal end portion comprising an uninsulated, conductive, rigid helix adapted for attachment to body tissue. Means located and engageable at substantially the distal end portion are provided for facilitating the screwing of the helix into body tissue. A device is provided with means for firmly holding the means for facilitating the screwing of the helix into body tissue. The device also has means for holding the conductor and for preventing the transmission of torque to the proximal end of the conductor when the helix is being screwed into body tissue.

3,737,580

SPEAKER AUTHENTICATION UTILIZING A PLURALITY OF WORDS AS A SPEECH SAMPLE INPUT

Fausto Poza, Cupertino, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Jan. 18, 1971, Ser. No. 107,156
Int. Cl. G10l 1/02
U.S. Cl. 179—1 SB 8 Claims



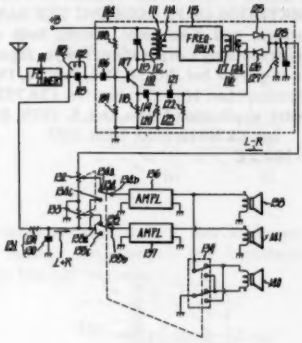
A method and system for talker authentication in which a trial speech sample from a person who may be legitimate or who may be an imposter is compared to a standard speech sample of the legitimate person. The trial speech sample forms the input to a plurality of band pass filters. The outputs of each of the filters are integrated over the duration of the speech sample and the integrated signals are normalized. These normalized signals are compared to normalized signals of a standard speech sample to generate a plurality of difference signals. The magnitudes of the difference signals are added together to generate an authenticity signal, the magnitude of which corresponds to the correspondence between the trial speech sample and the standard speech sample.

3,737,581

STEREOPHONIC BROADCASTING RECEIVING SYSTEM WITH ACOUSTIC MATRIXING

Sunobu Horigome, Shinagawa-ku, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,438
Claims priority, application Japan, Oct. 16, 1969, 44/82796
Int. Cl. H04h 5/00
U.S. Cl. 179—15 BT 4 Claims



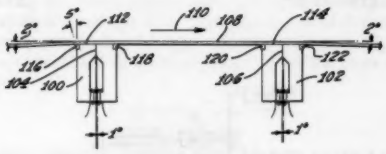
A stereophonic sound reproducing system which finds particular application in an FM radio broadcasting receiver. The FM signal is demodulated and there is detracted therefrom a sum signal of the right and left stereo channels and a difference signal of the difference between the right and left stereo channels. The sum signal and a phase reversed sum signal are applied respectively to first and third loudspeakers. The difference signal is applied to a second loudspeaker which is positioned between the first and third speakers. By this arrangement stereophonic sound is produced without requiring a matrix circuit in the radio receiver. Furthermore, a stereophonic effect is perceived by the listener, and which effect is not particular dependent on the relative location of the speakers and the listener, nor on the acoustical properties of the room in which the sound is being reproduced.

3,737,582

FLAT MAGNETIC HEADS

Dean L. DeMoss, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1968, Ser. No. 726,058
Int. Cl. G11b 5/24
U.S. Cl. 179—100.2 C 6 Claims



This invention is directed to a magnetic transducing head for use with a moving magnetic recording medium. Specifically, the invention is directed to a physical construction for the magnetic transducing head for providing an improved contact between the magnetic medium and the magnetic transducing head wherein the magnetic transducing head includes a sharp leading edge constructed of wear-resistant material and wherein the leading edge forms an included angle of 90° or greater between the magnetic medium and the leading edge so that as the magnetic medium passes over the sharp leading edge, the leading edge removes air from the surface of the

magnetic medium, which removal of air produces a pressure differential in a direction to urge the magnetic medium into contact with the face of the magnetic transducing head. Generally, the invention may also provide for a flat face for the magnetic transducing head so as to maintain the close contact between the magnetic medium and the face of the magnetic transducing head.

3,737,583

MAGNETIC HEAD WITH WEAR-RESISTANT SURFACE, AND METHODS OF PRODUCING THE SAME

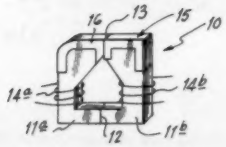
Noriyuki Tsuchiya, and Katsutoshi Amari, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 58,594, July 27, 1970. This application Mar. 16, 1971, Ser. No. 124,758

Claims priority, application Japan, Oct. 5, 1970, 45/87352

Int. Cl. G11b *5/40;* **C23c** *3/02*

U.S. Cl. 179—100.2 C **5 Claims**



A magnetic head core element, for example, of ferrite, is provided, at least at a surface thereof subject to wear, with an electrodeposited magnetic metal layer containing a dispersed powder that is harder than the metal. The powder-containing metal layer is electrodeposited by immersing the core, preferably after deoxidizing the surface thereof to receive the layer, in an electrolyte containing a salt of the magnetic metal and a dispersion of the relatively hard powder, and passing a current between the core, acting as a cathode, and an anode also immersed in the electrolyte.

3,737,584

MALFUNCTION MONITORING EQUIPMENT FOR A TIME DIVISION MULTIPLEXED TRANSMISSION SYSTEM

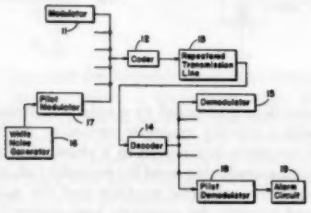
Haruo Kaneko, and Kaoru Yano, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Dec. 9, 1970, Ser. No. 96,555

Claims priority, application Japan, Dec. 16, 1969, 44/101482

Int. Cl. H04b *3/46*

U.S. Cl. 179—15 BP **5 Claims**



A malfunction monitoring system for the analog circuit of a time division multiplexed pulse code modulation system uses a noise signal as the pilot signal.

3,737,585

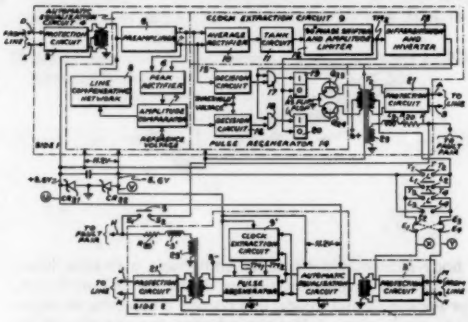
REGENERATIVE PCM LINE REPEATER

Suhas Ghosh, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 16, 1971, Ser. No. 153,546

Int. Cl. H04b *3/36*

U.S. Cl. 179—15 AD **22 Claims**



The line repeater operating on bipolar PCM signals includes substantially identical circuits for both directions of communication to provide line equalization, clock extraction, and pulse regeneration and retiming. A differential input, differential output operational amplifier has a line compensating network in a feedback path thereof. A peak detector coupled to both outputs of the operational amplifier and an amplitude comparator coupled to the output of the peak detector and a reference voltage produces a control signal to control the line compensating network and thereby compensate for line distortion of the received PCM signals and provide constant amplitude received PCM signals on both outputs of the operational amplifier. The clock extractor includes an average full wave rectifier coupled to both outputs of the operational amplifier, a tank circuit coupled to the output of the average rectifier and a 90° phase shifter and amplitude limiter to produce first square wave timing pulses predeterminedly related to the bit rate and the zero crossings of the received PCM signals. The first timing signal has its negative going transistions differentiated and inverted to produce second timing pulses. The pulse regenerator includes a threshold voltage and two decision circuits coupled thereto and to the outputs of the operational amplifier, a different decision circuit being provided for each polarity of the received PCM signal. A different AND gate is coupled to the output of each of the decision circuits and are enabled by the second timing pulses. A different RS flip flop is coupled to the output of each of the AND gates and are reset by the positive going transistions of the second timing pulses. The output of the two RS flip flops are combined to provide regenerated bipolar PCM signals for transmission to the next line repeater. A direct current voltage coupled over the transmission line and a zener diode arrangement provides +V and −V power supply voltages at the repeater. A voltage of ±V volts is used in the operation amplifier of both directions of communication, a voltage of +V volts is used in the remainder of the circuits of one direction of communication and a voltage of −V volts is used in the remainder of the circuits of the other direction of communication.

3,737,586

TIME DIVISION SWITCHING SYSTEM

Glover Douglas Johnson, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

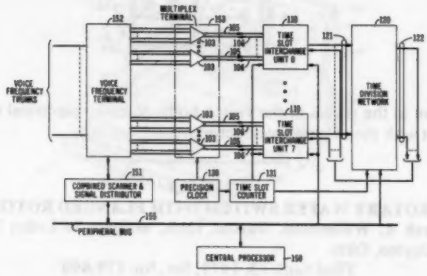
Filed Oct. 1, 1971, Ser. No. 185,749

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AQ **6 Claims**

A toll telephone switching system for switching PCM data among time division multiplex lines is disclosed. The system

comprises a time-shared space division network and interface circuits which buffer incoming PCM data and distribute the incoming data from a group of multiplex lines over a group of



input ports of the network. The interface circuits also buffer outgoing PCM data at the output side of the network and distribute the data from a group of output ports of the network over a group of output multiplex lines.

3,737,587

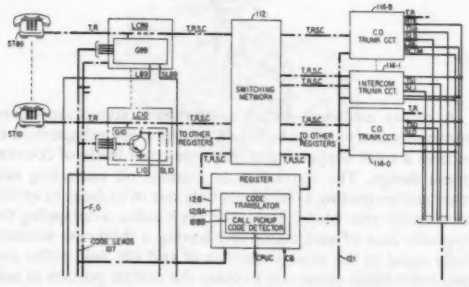
TELEPHONE SWITCHING SYSTEM HAVING CALL PICKUP SERVICE

Roderic Romero, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1971, Ser. No. 189,564

Int. Cl. H04m *3/42*

U.S. Cl. 179—18 B **17 Claims**



A wired logic electronically controlled switching system is disclosed having subscriber stations divided into a plurality of groups together with facilities whereby any subscriber may dial a predetermined code to answer an incoming call directed to another station in the same group.

3,737,588

HIGH SPEED SEMICONDUCTOR SWITCHING CIRCUIT

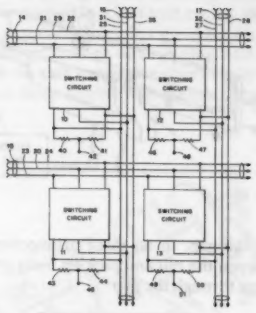
A. Frederick Susi, Dedham, Mass., assignor to GTE Sylvania Incorporated, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,165

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 GF **6 Claims**

Crosspoint switching array, each crosspoint switching circuit including silicon controlled switches for connecting signal lines of one group of transmission lines to signal lines of another group. Each switching circuit includes a transistor triggering arrangement connected between control lines of the two groups. Coincident pulses on the control lines cause current to flow in the triggering arrangement thereby switching the silicon controlled switches ON and providing signal paths between the two groups of lines. A leakage resistance is connected between the cathode of each silicon controlled switch and a source of biasing potential so that when the silicon controlled switches are turned OFF, stored charges are rapidly dissipated through the relatively low impedance paths provided by the leakage resistances.



3,737,589

RECORDING MECHANICALLY REPRODUCIBLE HIGH FREQUENCY SIGNALS ON RECORDING CARRIERS

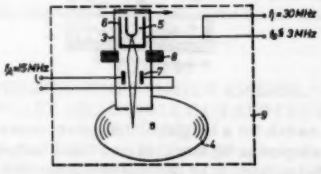
Horst Redlich, and Hans-Joachim Klemp, both of Berlin, Germany, assignors to Teldec Telefunken-Decca Schallplatten G.m.b.H., Hamburg, Germany

Filed Aug. 2, 1971, Ser. No. 168,073

Claims priority, application Germany, Aug. 1, 1970, P 20 38 453.6

Int. Cl. G11b *11/06*; **H04n** *5/86*

U.S. Cl. 179—100.3 A **10 Claims**



A method of recording mechanically reproducable high frequency signals on a record disc by applying to a carrier disc a beam which will result in the removal of material from the disc, causing the beam to describe a spiral path on the disc, deflecting the beam, alternatingly transverse to the path at a rate which is a multiple of the signal being recorded and simultaneously modulating the beam intensity with such signal and with a signal whose frequency is twice that of the beam deflection rate.

3,737,590

ELECTRICAL POWER PICK-UP FOR VEHICLES

James Stewart Johnston, Bognor Regis, England, assignor to Rosemont Engineering Company Limited, Bognor Regis, Sussex, England

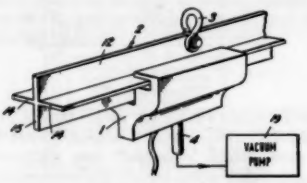
Filed Apr. 8, 1971, Ser. No. 132,525

Int. Cl. B60l *5/08*

U.S. Cl. 191—45 R **15 Claims**

An electrical power pick-up for vehicles, particularly high speed vehicles comprises a pick-up body shaped partially to embrace a conductor rail without direct contact with the rail. An air stream through the gap between the rail and pick-up keeps the two apart. The air stream may be effected by vacuum suction, in which case ionizing means, such as a radioactive source or a source of radio frequency power are used to

assist ionization in the gap. Alternatively, the air stream is a hot gas stream, e.g. from a jet engine, the hot gases facilitating



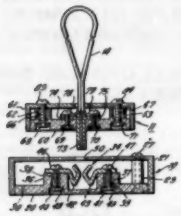
ionization of the gap. In all three arrangements the applied potential between the rail and pick-up body produces an electrical discharge through the gap.

3,737,591

TRAP SWITCH WITH ELONGATED MOUNTING WIRE FOR COMPLETING CONTINUITY CIRCUIT

Philip J. Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,917
Int. Cl. H01h *3/02, 13/70*
U.S. Cl. 200—61.93 **10 Claims**



A trap switch for a burglar alarm system consists of a base member adapted to be mounted on a fixed body and a movable member adapted to be connected to a movable member by an elongated flexible wire. The base member has a pair of fixed contacts biased toward one another with an access slot in the base member housing disposed in a region between the fixed contacts. The movable member has an extending insulation stab portion carrying insulated conductive surfaces on its opposite sides The extending stab can be pressed between the fixed contacts of the base member and each contact engages one of the conducting stab surfaces. An extending wire is mechanically connected at its ends to the conductive surfaces. A continuity circuit is connected in series with the fixed contacts, and can be either normally open or normally closed depending on whether the elongated wire is conductively connected between the conductive surfaces.

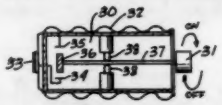
3,737,592

IMPROVED REPLACEABLE ELECTRIC SWITCH

Jorge Lay, Santurce, P.R., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,912
Int. Cl. H01r *33/28*
U.S. Cl. 200—51.14 **3 Claims**

An improved electrical switch, in which the switch element is removable from the switch housing and replaceable by a similar switch element, with the external electrical conductors being permanently connected to the said switch housing. The switch element, including the operator, may be fastened to the switch housing by means of an external screw thread on the switch element body, which mates with the female thread



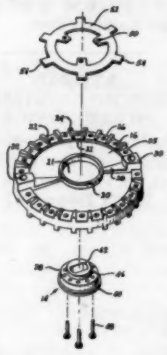
form in the recess in the switch body, to make electrical contact with the external conductors.

3,737,593

ROTARY WAFER SWITCH WITH FLANGED ROTOR

Burch A. Williamson, Dayton, Ohio, assignor to Ledex Inc., Dayton, Ohio

Filed Sept. 13, 1971, Ser. No. 179,690
Int. Cl. H01h *19/58*
U.S. Cl. 200—11 D **7 Claims**



A rotary electrical switch comprises a stator supporting conventional stator contacts and having a central aperture to receive a rotor supporting at least one rotor blade of conventional design. The stator has an annular rib encircling said rotor and projecting axially from only one of its faces to axially locate said rotor blade. The rotor has a collar overlapping the opposite face of said stator and having a thickness substantially equal to the axial projection of said rib. Said collar and said rotor blade cooperate to clasp the central portion of said stator therebetween, and said collar adapted to support one or more additional rotor blades.

3,737,594

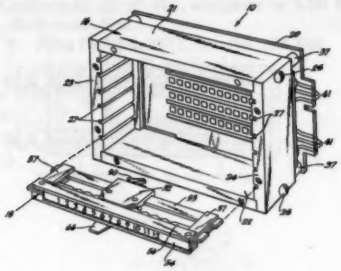
SLIDE SELECTOR SWITCH WITH MULTIPLE INDEPENDENTLY REMOVABLE SLIDE ASSEMBLY MODULES

Carl William Rosmanith, Des Plaines, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 15, 1972, Ser. No. 234,812
Int. Cl. H01h *15/00;* **H02b** *1/10*
U.S. Cl. 200—16 R **12 Claims**

A slide selector switch including a plurality of independently removable slide assembly modules mounted within a housing, with each module having electrical contacts adapted to engage an etched printed circuit board at the rear of the housing. Each module includes a non-signal carrying slide supporting bar and at least one slide which supports the electrical contacts and is adapted for positive detenting to multiple switch positions along the bar. Each module is otherwise provided with a targeting arrangement which produces a highly visible display of an indicia associated with the selected switch position. The slide selector switch enables a high number of

positive circuit selections to be made from a small panel area. Furthermore the slide assembly modules are readily removable from the switch housing for replacement, and such



removal does not disturb the circuitry of the circuit board or wiring attached thereto, since the modules have no signal carrying member other than the electrical contacts.

3,737,595

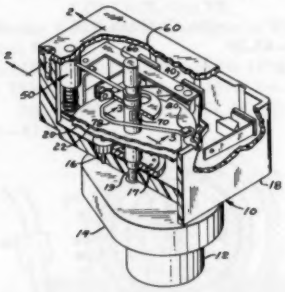
PUSH TO START TIMER

Harold T. Simmons, and Richard E. Pervorse, both of Elizabethtown, Ky., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 27, 1971, Ser. No. 212,139

Int. Cl. H01h *3/02, 43/00*

U.S. Cl. 200—33 R **3 Claims**



A timer having switches actuated by motor powered cam or other means and having a shaft and a control knob therefor that can be rotated manually to set the timer and further having a timer start switch, the control knob being secured to a plunger that is rotatably keyed to the shaft but axially movable relative thereto, and linkage operative from the plunger to actuate the timer start switch only upon axial displacement of the plunger.

3,737,596

CAM OPERATED RETARDED TIMER SWITCH ASSEMBLY WITH DASHPOT TYPE AIR TIMER UNIT

Eisuke Yokoyama, Musashino-shi, Tokyo, Japan, assignor to Kawaguchiko Seimitsu Kabushiki Kaisha, Minami-tsura, Japan

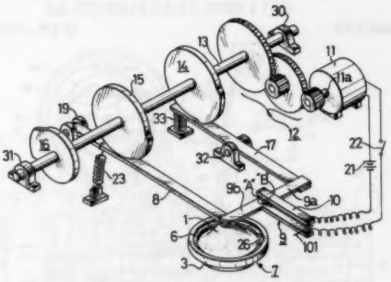
Filed Dec. 13, 1971, Ser. No. 207,391

Claims priority, application Japan, Dec. 12, 1970, 45/123586

Int. Cl. H01h *7/03, 43/00*

U.S. Cl. 200—34 **3 Claims**

This invention relates to a combined, pneumatic, mechanical and electrical control timer mechanism including an air timer unit which comprises a resilient diaphragm having its outer periphery fixedly attached to said casing a compression spring mounted in the interior of said casing so as to urge resiliently said diaphragm in its inflating direction, an opening bored through said casing for establishing fluid communication between the interior space of said casing, the ambient atmosphere, and a pervious member covering said opening for limiting fluid passage through said opening, and a check valve means provided on said casing for checking invasion of ambient atmosphere from outside into the interior of said casing,



yet, allowing the reverse air flow. The mechanism comprises further a cam shaft which carries a first, a second and a third cam. The third cam is an operation instructing member for control of a separate machine or instrument, such as the medicament sprayer. The first and second cams control a normally closed contact pair which is inserted in the circuit in the circuit for an electric motor geared to said cam shaft. The second cam is arranged to reset the air timer unit. The first cam acts upon the contact pair to open only after the second cam has completed the reset operation for the air timer unit.

3,737,597

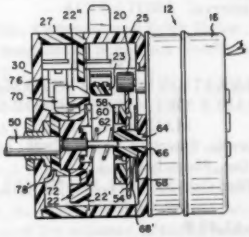
CAM OPERATED TIMER SWITCH ASSEMBLY WITH MANUALLY ADJUSTABLE CAM AND CLUTCH MECHANISM

Lewis E. Jones, and Richard W. Wilkinson, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Oct. 20, 1971, Ser. No. 190,738

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—38 BA **12 Claims**

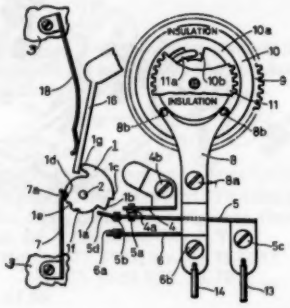


Manual axial and rotational indexing of a cam carrying shaft engages a clutch means so as to apply power driven rotation to a cam means carried by the shaft, and causes engagement of a means to retain the clutch in engagement.

3,737,598
TIMING SWITCH MECHANISM WITH MANUAL ADJUSTABLE CAM

Tetsuo Kudoh, Kitakatsushika-gun, and Hideo Koide, Urawashi, both of Japan, assignors to Rythm Watch Company, Limited, Tokyo, Japan

Filed Feb. 29, 1972, Ser. No. 230,345
Claims priority, application Japan, Mar. 4, 1971, 46/13292; Dec. 16, 1971, 46/117953
Int. Cl. H01h 43/10, 7/08
U.S. Cl. 200—38 R 8 Claims



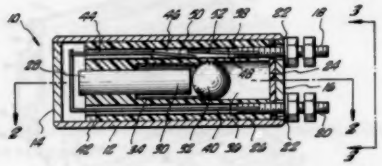
The mechanism is arranged in a clock driven either by a main spring or a battery, and comprises a manually rotatable switch cam, of insulating material, having three stepped portions of progressively increasing height on its periphery and three pits or dents in its periphery, each related to one of the stepped portions. The timing switch includes two relatively fixed contact springs and a third intermediate and movable contact spring, each of the relatively fixed springs having a contact thereon engagable with a respective contact on the intermediate spring. A spring engagable in the notches releasably retains the switch cam in a selected operated position. A flexible contact arm connected to one of the two relatively fixed contacts engages an annular contact on an unlocking wheel, and a projecting contact finger is secured to an hour wheel of the clock. The annular contact has a radially inwardly projecting extension which is engagable by the contact finger on the hour wheel. The intermediate contact is normally engaged with that fixed contact which is not connected to the contact arm engaging the annular or ring contact. In another embodiment the intermediate contact and one of the fixed contacts are extended for cooperation with another cam forming part of a mechanism whereby a transistor radio, when turned on, may be automatically turned off by the clock after a preset time interval.

3,737,599
ACCELERATION SWITCH WITH MAGNETIC PERMEABLE METAL SLEEVE FOR SHUNTING MAGNETIC FIELD

Bernard R. Zuvela, Fountain Valley, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Oct. 26, 1971, Ser. No. 192,219
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 6 Claims

An acceleration switch utilizes a permanent magnet with a pole enclosing a magnetically permeable shield and a magnetically permeable ball. The field of the magnet is normally shunted by the shield and ball to weaken the magnetic field existing at a magnetic reed switch. In response to the acceleration, the ball leaves the sleeve and diminishes the shunting effect of the sleeve, so that the field at the reed switch increases and actuates the switch. Directional sensitivity of the acceleration switch is provided by the shape of the cavity within which

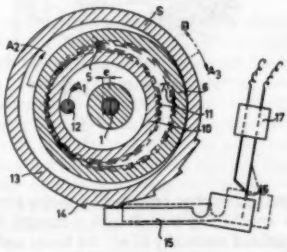


the ball moves. A winding may be provided about the reed switch for testing switch operation or selectively inhibiting the actuation of the switch.

3,737,600
TAPE RECORDER CONTROL WITH SHAFT ROTATION SENSING MECHANISM FOR ACTUATING SWITCH

Ghislanus Matheus Anthonius Maria Aldenhoven, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,773
Claims priority, application Netherlands, Oct. 1, 1970, 7014411
Int. Cl. H01h 3/16
U.S. Cl. 200—61.39 6 Claims

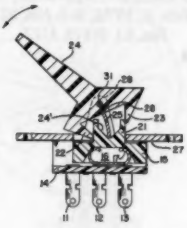


A mechanism for initiating a switching function in an apparatus for recording and/or playing back magnetic recordings on and/or from a recording tape has a continuously rotating first component and a rotatably mounted disc, co-axially arranged with respect to the first component, which rotates only during tape transport. The disc has an internally tooth rim portion. A cam wheel is interposed between the disc and the first component and is eccentrically arranged. The cam wheel has an annular hub portion which is provided with external teeth which are locally held in engagement with the internal teeth of the rim portion by means of an axially projecting pin provided on the first component part. The cam wheel rotates in one direction during tape transport performing an eccentric movement, and rotates in the opposite direction when the tape is in the stationary condition, thus operating a switch for switching off or changing over the tape drive.

3,737,601
SNAP ACTION SLIDE SWITCH

Ronald H. Arthur, Fort Lauderdale; Melvin F. Eickhorst, Hollywood; Earl A. Hansen, and Albert M. Pichitino, both of Fort Lauderdale, all of Fla., assignors to UID Electronics Corp., Hollywood, Fla.

Filed Feb. 24, 1972, Ser. No. 228,889
Int. Cl. H01h *15/18*
U.S. Cl. 200—76 **6 Claims**

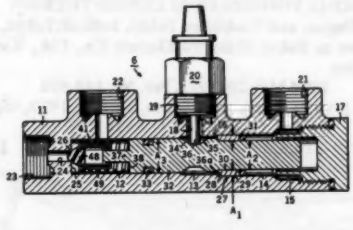


A slide switch includes a sliding contact carrier formed with a central recess for accommodating one end of an overcentering spring element. In one form of the invention, this recess faces away from the contacts and the other end of the spring element is seated in a recess formed in the underside of a rocker arm. In another aspect of the invention, the spring recess faces the fixed contacts and the other end of the spring element is seated in the terminal board containing the fixed contacts.

3,737,602
CONTROL VALVE

Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Division of Ser. No. 22,903, March 26, 1970, Pat. No. 3,700,286. This application Apr. 25, 1972, Ser. No. 247,310
Int. Cl. H01h *35/38;* **F16k** *31/383*
U.S. Cl. 200—82 D **8 Claims**

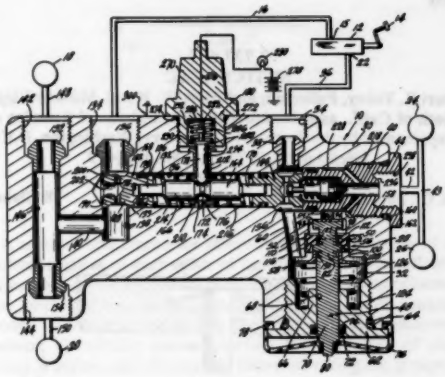


A control valve for use in a dual or split braking system which has a proportioning valve therein generally operable to proportion the fluid pressure in one of the systems. The control valve is provided with a shuttle or warning piston movable from a normally centered position to opposed translated positions in response to a predetermined differential between the separate supplied fluid pressures in said systems acting thereon. A by-pass passage is provided in the control valve connected in by-pass relation with the proportioning valve, and a valve member is normally urged toward a position closing said by-pass passage. A lost motion connection is defined between the shuttle piston and valve member wherein said valve member is moved to a position opening the by-pass passage permitting the flow of one of the supplied fluid pressures therethrough in by-pass relation with the proportioning valve to obviate the proportioning function thereof upon the movement of the shuttle piston to one of its translated positions. It is also contemplated that the control valve can include the proportioning valve.

3,737,603
PRESSURE RESPONSIVE PISTON ACUATED SWITCH AND VALVE MEANS

George R. Kish, Owosso, and Kenneth B. Swanson, Bannister, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 47,718, June 19, 1970, Pat. No. 3,674,954. This application July 19, 1971, Ser. No. 164,134
Int. Cl. H01b *35/38;* **B60t** *17/22*
U.S. Cl. 200—82 D **10 Claims**



A pressure responsive mechanism for use in dual hydraulic brake systems of automative vehicles wherein the front and rear brakes of the vehicle are provided with independent hydraulic brake systems actuated by a dual master cylinder, the pressure responsive mechanism being interposed between the dual master cylinder and the front and rear brake actuators and incorporating means actuable when a predetermined pressure differential occurs between the front and rear brake systems to effect a signal and being automatically reset when the pressure differential falls below a predetermined value. The pressure responsive mechanism includes switch actuator means and a pair of pressure responsive members disposed on opposite sides of and normally spaced from said actuator means, but movable into contact with said actuator means upon normal brake operation, and moving said actuator means if brake failure should occur.

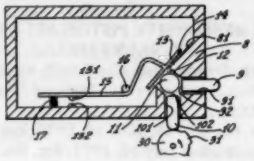
3,737,604
SINGLE SWITCH WITH MULTIPLE TRANSVERSE ACTUATORS

Bernhard Dietrich, Eichenau, and Erich Huber, Munich, both of Germany, assignors to Schaltbau Gesellschaft mbH, Munich, Germany

Filed Nov. 3, 1971, Ser. No. 195,251
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 LB **19 Claims**

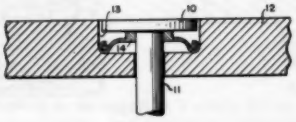
Apparatus for operating an electrical switch including an actuator disposed for displacement in a particular direction from a first position with displacement to continue towards a second position, the switch having different switching states in the two positions of the actuator, actuator means operating in and along a plurality of different directions having angle smaller than 180° relative to the particular direction. Displacement transmission means including at least one transmission element and being operated by the actuator means for engagement with and displacement of the actuator, for the actuator to move in the particular direction as the actuator

means is displaced in one of the different directions of the plurality. Means for limiting the displacement of the transmission



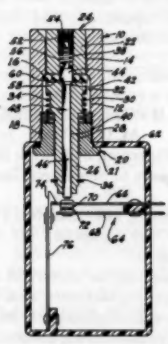
element along one or more linear paths, the number of paths not exceeding the number of different directions of the plurality.

3,737,605
SWITCH SEAL
Albert E. Tobey, Fullerton, and Alvis W. Wood, Mission Viejo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 8, 1971, Ser. No. 132,469
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 G **8 Claims**



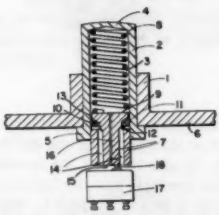
This invention is a switch seal for push button type electrical switches to prohibit water from leaking into entry panels and damaging electronic functions.

3,737,606
MANUAL RESET DEVICE WITH INDICATING MEANS
Eilhard J. Becker, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 7, 1971, Ser. No. 205,488
Int. Cl. H01h *9/20*
U.S. Cl. 200—169 PB **6 Claims**



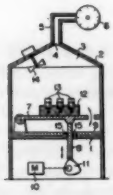
An indicating reset device for moving a safety cutoff switch or valve from its tripped or cutoff position toward which it is biased to an operative set position, the device having a slidably mounted plunger biased in one direction to an indicating position and operative when pushed oppositely to a non-indicating position to move a safety switch or valve to its set position, the device further including means for latching the plunger in its non-indicating position, the latching means being released by the biasing force of the safety switch or valve when an unsafe operating condition causes it to be tripped, and the plunger member having a conspicuously colored end portion which is retracted from view when in a non-indicating position and exposed when released to an indicating position.

3,737,607
SWITCH ACTUATING MECHANISM
Anthony Newton Lawson, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 1, 1972, Ser. No. 222,487
Int. Cl. H01h *3/12*
U.S. Cl. 200—172 A **4 Claims**



A pushbutton switch for holding a microswitch in its open position for a period of time less than a preselected duration. A plunger is slidably mounted within a cylindrical pushbutton and is urged out of said pushbutton by a helical spring. Vent holes and bleed paths are formed in said plunger and combine with an O-ring positioned between the plunger and the interior of the pushbutton to provide pneumatic damping to retard the movement of the plunger out of the pushbutton.

3,737,608
METHOD AND APPARATUS FOR STERILIZING THE INTERIOR OF A VESSEL CONTAINING A FLUID WITH SOME VOID SPACE ALLOWED THEREIN
Tsuguki Nagao, and Toshihiko Toishi, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 28, 1971, Ser. No. 148,098
Claims priority, application Japan, May 30, 1970, 45/46017
Int. Cl. H05b *9/06*; **A61l** *3/00*
U.S. Cl. 219—10.55 **2 Claims**



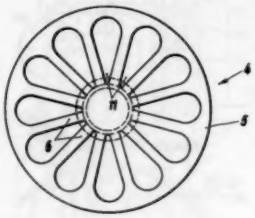
A method for thermally sterilizing the interior of a vessel containing a fluid with some void space allowed therein comprises moving the vessel so as to cause the fluid contained therein to flow over its entire inner walls and irradiating microwave energy to the vessel while it is moved.

3,737,609

PROCESS FOR HEATING STAMPED METAL DISCS

Franz Josef Overkott, Gevelsberg, Germany, assignor to Firma Paul Ferd. Peddinghaus, Gevelsberg, Germany

Filed Aug. 24, 1971, Ser. No. 174,435
Claims priority, application Germany, Feb. 16, 1971, P 21 07 355.2
Int. Cl. H05b 5/06
U.S. Cl. 219—10.41 12 Claims



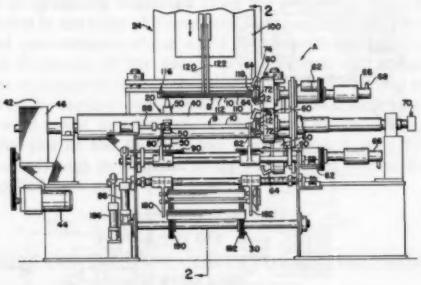
A process for heating stamped metal discs or other plates, or rings, having radially extending tongues, prior to the forming of the stamped blanks into spring retainer members and the like, the process comprising electrically connecting together the tongues of a stamped blank at or near their free ends, and then heating the stamped blank to a predetermined desired temperature by electrical induction heating. The process may be carried out with the stamped blank supported in a press which is used to deform and quench the blank subsequent to it being heated to the predetermined temperature. The press accommodates a contact ring for electrically connecting the tongues under pressure and means for rotating the stamped blank during the induction heating of the blank.

3,737,610

APPARATUS FOR INDUCTIVELY HEATING AND QUENCH HARDENING AN ELONGATED WORKPIECE

Robert G. Armstrong, Chardan, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 16,710, March 5, 1970, Pat. No. 3,622,995. This application Feb. 23, 1972, Ser. No. 228,522
Int. Cl. H05b 5/00
U.S. Cl. 219—10.67 2 Claims



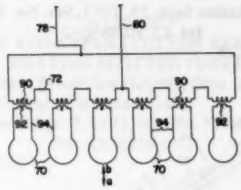
A device for inductively heating and quench hardening an elongated workpiece including a heating station having single-turn inductor extending the length of the workpiece for heating the total workpiece simultaneously and as it is rotated; a quenching station having an elongated quench body for quenching the total workpiece simultaneously and as it is rotated; a movable member at the quenching station for bending the workpiece from one side while the workpiece is being rotated whereby the various portions of the workpiece are alternately flexed between compression and tension; and, means for gradually retracting the member from the workpiece so that the amplitude of flexing is decreased until this amplitude is zero. In this manner, the workpiece is straightened as it is quench hardened.

3,737,611

METHOD AND CIRCUIT FOR INTERCONNECTING A PLURALITY OF INDUCTORS AT THE OUTPUT TRANSFORMER SECONDARY

William H. Killian, Cuyahoga, Ohio, assignor to Park-Ohio Industries, Inc, Cleveland, Ohio

Filed Feb. 28, 1972, Ser. No. 229,894
Int. Cl. H05b 5/06
U.S. Cl. 219—10.75 3 Claims



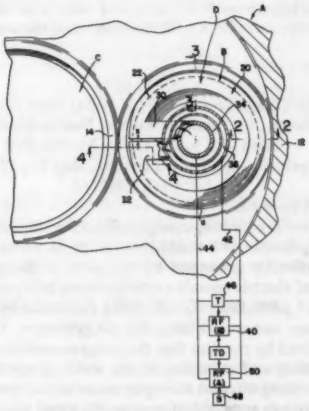
A method and circuit for interconnecting a plurality of inductors relative to each other in order to reduce the reflected impedance at the secondary portion of an output transformer. The method comprises separating the inductors into separate groups with each group having the same number of inductors therein; electrically interconnecting the inductors of each group in series; and, electrically interconnecting the groups in parallel to each other for electrical interconnection to the output transformer secondary.

3,737,612

APPARATUS FOR INDUCTIVELY HEATING VALVE SEATS

George D. Pfaffmann, Farmington, and Michael R. Hammond, Detroit, both of Mich., assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,494
Int. Cl. H05b 5/04
U.S. Cl. 219—10.79 3 Claims



An induction heating device for inductively heating the first of a pair of closely positioned conical valve seats in an internal combustion engine block which device comprises an inductor

having a generally circular shape matching the first valve seat, means for positioning the inductor adjacent the valve seat and spaced only slightly therefrom, a radio frequency power source having a frequency of over 250 Kc, means including two spaced leads for connecting the power source to the inductor, means for starting the power source, and means for stopping the power source after a preselected time whereby the valve seat is hardened by quenching from conduction to the engine block itself.

3,737,613

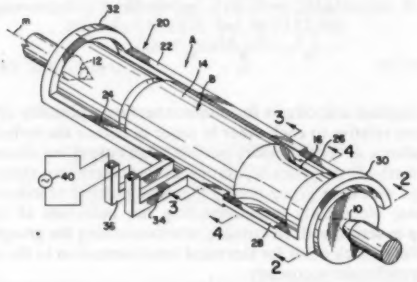
INDUCTOR FOR HEATING AN ELONGATED WORKPIECE HAVING DIFFERENT CROSS-SECTIONS

Jack W. Gillock, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 37,254, May 14, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,931

Int. Cl. H05b 9/02

U.S. Cl. 219—10.79 **1 Claim**



An inductor for inductively heating an elongated workpiece having a length, central axis, a first cylindrical portion with a radius r and a second cylindrical portion with a radius r', wherein the cylindrical portions are generally concentric with the axis and r and r' are substantially different. This inductor includes first and second generally parallel conductors extending substantially the complete length of the workpiece, cross-over conductors connecting the parallel conductors at their respective ends and the parallel conductors each have a first section adjacent the first cylindrical portion of the workpiece and a second section adjacent the second cylindrical portion of the workpiece with the effective widths of these sections being different to effect uniform heating of the workpiece.

3,737,614

AUTOMATIC ARC WELDING MACHINES

Serge Paulange, 12, Raute de Verton, Nantes 44, France

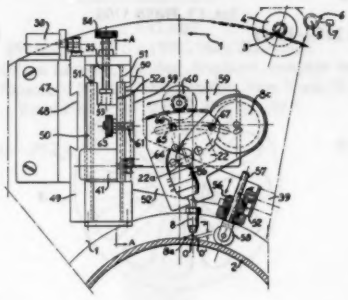
Filed Oct. 6, 1971, Ser. No. 186,960

Claims priority, application France, May 21, 1971, 7120033

Int. Cl. B23k 9/12

U.S. Cl. 219—60 A **14 Claims**

Device for performing completely automatic welding operations using fusible or infusible electrode, in accordance with a program directly governed by the path of the electrode, by emission of electric signals corresponding to equal elementary portions of path, such signals being collected by at least one step-by-step motor actuating the programmer. The device is characterized by the fact that the programmer includes means of controlling and adjusting all the welding parameters listed below : welding current strength, current pulsations, wire advance, wire advance pulsations, starting and stopping the unwinding of the wire, the rate of movement of the electrode, variations in such rate, arc fading, the minimum flow of protective gas, adjustment of the position of a torch perpendicularly to the welding wire and parallel to the surfaces to be welded, adjustment of the distance of the torch from the surfaces to be welded, slope of the torch in a plane passing through the welding wire, and slope of the torch in a plane perpendicular to the welding wire. The programmer turns



step-by-step under the impulse of the electric signals emitted by the means of moving the torch, so that the angular speed of the programmer is directly proportional to the path travelled by the torch.

3,737,615

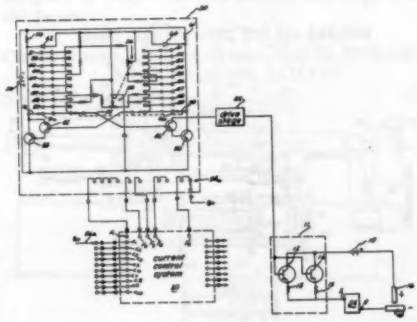
CURRENT AND FREQUENCY CONTROL SYSTEM FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Elox Inc., Davidson, N.C.

Filed Sept. 13, 1971, Ser. No. 179,664

Int. Cl. B23p 1/08

U.S. Cl. 219—69 C **14 Claims**



An electrical discharge machining circuit of independently variable machining pulse frequency and current magnitude as set by machining pulse on-time. A current control system is employed to limit current to the gap to a safe level in accordance with each preselected frequency and current magnitude combination. Included to accomplish the control function are a plurality of gating means connected in a logic system and employing the resistor-transistor configuration.

3,737,616
APPARATUS FOR MANUFACTURING SPHERICAL METALLIC VESSELS OR HEMISPHERICAL VESSEL HEADS

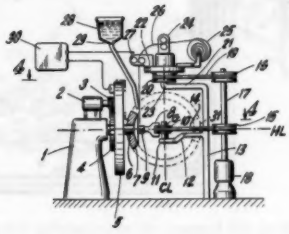
Akira Ujiie, Kobe-shi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 22,772, March 26, 1970, abandoned. This application Apr. 2, 1971, Ser. No. 130,765

Claims priority, application Japan, Mar. 28, 1969, 44/21340

Int. Cl. B23k 9/04

U.S. Cl. 219—76 4 Claims



A spherical container or a hemispherical head for a pressure vessel, is formed integrally of deposited weld metal. A first turntable is rotatable about a substantially horizontal axis which constitutes one diameter of the sphere, and a second turntable is rotatable about a substantially vertical axis which constitutes another diameter of the sphere perpendicular to the first diameter. A small spherical metallic segment constitutes a starting piece, and has a wall thickness equal to that of the vessel to be formed, the segment forming the base of a solid central angle of the sphere. The segment has a tapered step extending completely around its peripheral edge and having a maximum height equal to the thickness of a layer of weld metal to be deposited and a minimum height equal to zero, thus forming an abrupt step. The segment is mounted on the first turntable for symmetrical rotation about the first diameter of the sphere. The second turntable supports an electroslag welding apparatus for revolution about the mentioned vertical axis, and a channel-shape copper block is also mounted for revolution about the vertical axis and is arranged to embrace the periphery of the segment, this block forming a backing bar for the deposited weld metal and flux. The weld metal is progressively deposited along the peripheral edge of the segment in the form of a continuous strip comprised of superposed convolutions whose width is substantially equal to the wall thickness of the vessel to be formed and whose thickness is substantially equal to that of the step. The rate of rotation of the segment is coordinated with the rate of deposition of weld metal, and the rate of revolution of the welding apparatus and of the backing bar is coordinated with the progressive change in diameter of the vessel being formed by the deposited weld metal.

3,737,617
EXPOSURE CONTROL APPARATUS FOR AN ELECTRON MICROSCOPE

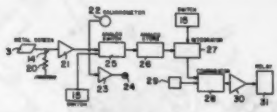
Helenio Llop, Creteil, and Pierre Lefort, Fontenay-sous-Bois, both of France, assignors to Societe D'Optique, Precision Electronique Et Mecanique-Sopelem, Paris, France

Filed May 10, 1971, Ser. No. 141,798

Int. Cl. H01j 37/26

U.S. Cl. 250—49.5 E 3 Claims

Apparatus for indicating and/or controlling the exposure time of photographic material exposed to the electron beam of an electron microscope includes an electron impermeable, insulated conductive screen which may be positioned to intercept a part at least of the electron beam. The current flowing to the screen may be measured to indicate required exposure time. Alternatively the voltage across a resistor in the current path may be stored and integrated to yield a signal for indicating that exposure should be terminated. The signal may be used to produce termination of exposure.



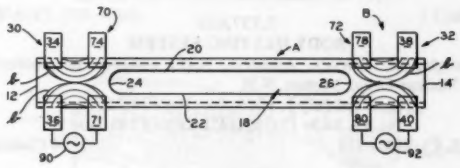
3,737,618
METHOD AND APPARATUS FOR RESISTANCE HEATING SLOTTED TUBES

Joseph E. Arnosky, Broadview Heights, Ohio, assignor to Park-Ohio Industries Inc., Cleveland, Ohio

Filed Sept. 7, 1971, Ser. No. 177,932

Int. Cl. C21d 9/62

U.S. Cl. 219—156 11 Claims



A method and apparatus for resistance heating an elongated tube having a slot-like area therein extending generally longitudinally over a portion of the length, which tube is to be subsequently formed at the slot area following heating. The tube is clamped between first and second pairs of contacts spaced immediately adjacent each end thereof. Third and fourth pairs of contacts are then clamped over the tube adjacent each end of the slot-like area and between the first and second pairs of contacts. An electrical current is then caused to flow through the tube between the first and third and the second and fourth pairs of contacts to effect heating of the tube ends. The third and fourth pairs of contacts are then removed from contact with the tube and an electrical current is caused to flow through the tube between the first and second pairs of contacts to effect desired heating over the entire length of tube.

3,737,619
WORKPIECE EXPANSION COMPENSATOR FOR RESISTANCE HEATING APPARATUS

Joseph E. Arnosky, Broadview Heights, and Ronald A. Meermans, Strongsville, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

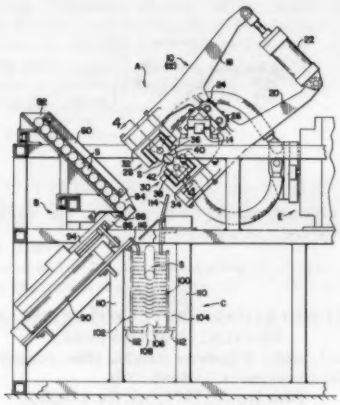
Filed Sept. 20, 1971, Ser. No. 181,666

Int. Cl. C21d 9/62

U.S. Cl. 219—156 8 Claims

An improvement which permits automatic compensation for longitudinal workpiece expansion in a resistance heating apparatus of the type wherein a workpiece is transversely gripped between two pairs of spaced apart resistance heating contacts during heating. The improvement comprises mounting one of the pairs of contacts in a manner to be transversely movable relative to the other pair of contacts in a direction generally axial to the workpiece as it expands longitudinally

during heating. Force means are provided for the movable pair of contacts for selectively axially moving the contacts to



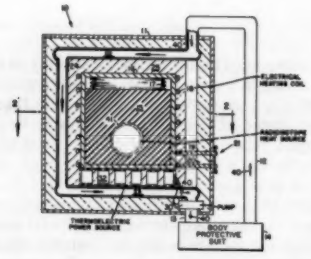
the initial position following heating of a workpiece in preparation for heating another workpiece.

3,737,620

BODY HEATING SYSTEM

Douglas G. Harvey, Amherst, N.H., assignor to Sanders Nuclear Corp., Nashua, N.H.

Filed July 1, 1969, Ser. No. 838,216
Int. Cl. B63c *11/28*; H05b *1/00*; F24h *7/04*
U.S. Cl. 219—211 **4 Claims**



A lightweight, compact, portable, personal body heating system utilizes an inner casing containing a material having a high heat of fusion. A heater is operatively associated with the inner casing for charging the material. A closed recirculating conduit means lies about the inner casing to permit recirculating liquid flow about the casing so that a heat transfer liquid is heated by the heat of fusion of the material. The conduit comprises an inlet tube and an outlet tube permitting passage of the fluid to a body protective device through the outlet tube and recirculation through the inlet tube.

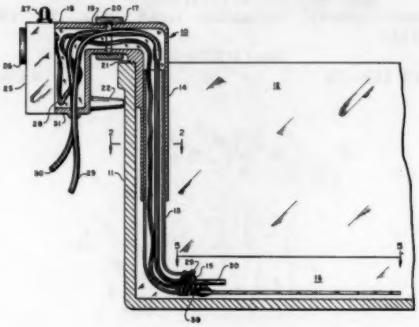
3,737,621

WATER-IMMERSIBLE ELECTRICAL HEATING DEVICE

Samuel M. Elkins, 1870 Pacific Avenue, San Francisco, Calif.

Filed Nov. 9, 1971, Ser. No. 196,904
Int. Cl. H05b *1/00*
U.S. Cl. 219—318 **8 Claims**

An immersible electrical heating device for use in aquariums or other water-containing vessels, said device comprising a planar heating unit which is resiliently coupled to the lower end of a hollow support column carrying electrical leads to the heater unit along with water and/or air conduits which open to the water. The heating unit, which is flexible in character, comprises a semi-conductive core layer made up of a fabric impregnated with a conductive resin, said layer carrying spaced bus elements arranged for connection to electrical leads and being bonded between electrically non-conductive face panels. The heating unit may, if desired, be enclosed



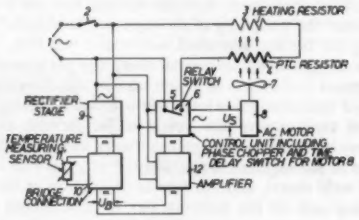
within a perforate protective cage. The support column is adapted to hang from a wall of the vessel and thereby position the attached heating unit, which projects from the column at any desired angle, either along the bottom of the vessel or at some other appropriate location.

3,737,622

TEMPERATURE-REGULATING APPARATUS

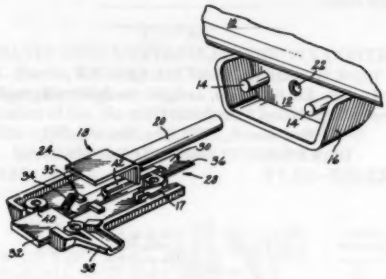
Knud Julius Hallgreen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 2, 1971, Ser. No. 149,187
Claims priority, application Germany, June 18, 1970, P 20 29 867.3
Int. Cl. H05b *1/02*; F24h *3/04*
U.S. Cl. 219—364 **6 Claims**



Electrical heating apparatus having temperature controllable regulating means. The apparatus includes, in series, heating and PTC resistors and a temperature responsive switch. An electric motor driven variable speed blower is arranged to blow cooling air over the heating and PTC resistors. A temperature sensor and bridge apparatus cooperates to produce a voltage signal which is proportional to the deviation of the temperature from a predetermined temperature. Upon a drop in temperature the proportional voltage signal is produced and, upon being amplified, the series switch is closed to admit current to the resistors and the blower motor is driven at a speed proportional to the voltage signal. The degree or extent to which the PTC resistor is cooled by the blower determines the resistance it presents in the circuit such that increased cooling of the PTC resistors results in a greater heat output by the heating resistor, and vice versa.

3,737,623
GROUNDED PROBE EJECTOR
Giacinto Vallone, Brockport, N.Y., assignor to General Electric Company, Bridgeport, Conn.
Filed Oct. 14, 1971, Ser. No. 189,132
Int. Cl. F27d 11/02
U.S. Cl. 219—441 8 Claims



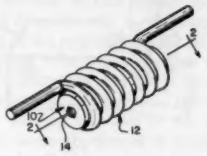
A detachable grounded probe control for an electric device, such as a skillet, the control being provided with an ejector movable against the skillet to disconnect and eject. The probe control has a fixed ground member and the ejector has an electrically conducting portion contacting the skillet the conducting portion being constantly biased against the ground member so the skillet is grounded through the ejector at all times.

3,737,624
ELECTRIC GRILL WITH A THIN-FILM HEATING ELEMENT
Stanley D. Ellenberger, Middletown, Conn., assignor to Progressive Products Corporation, Kensington, Conn.
Filed Sept. 16, 1970, Ser. No. 72,600
Int. Cl. H05b 3/06
U.S. Cl. 219—525 4 Claims

A metallic thin film resistance heating element comprises an electrically and thermally insulating substratum, a thin film resistor deposited in a plurality of sprayed layers superposed upon the substratum in the form of parallel, uniform strips, interconnectors for adjacent strips, electrode terminals at the ends of the resistor, and preferably an inert, abrasion-resistant coating covering the resistor upon the outer surface of the assembled heating element. A method of constructing such a heating element includes providing a thermally insulating substratum, depositing thereon by spraying in a plurality of layers a thin film resistor in a pattern of parallel uniform strips, providing series interconnectors for the strips and take-off terminals, and preferably applying an abrasion resistant coating covering the resistor upon the outer surface of the heating element.

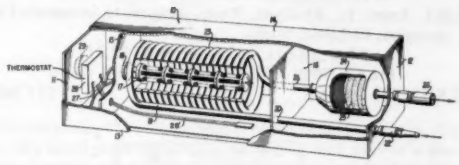
3,737,625
INFRARED RADIATION SOURCE
James R. Martin, Wellesley, Mass., assignor to Block Engineering Inc., Cambridge, Mass.
Filed July 6, 1971, Ser. No. 159,686
Int. Cl. H05b 3/10
U.S. Cl. 219—553 4 Claims

An infrared radiation source comprising a nickel-chromium alloy wire having an oxidized surface and being helically coiled around a stainless steel threaded core which functions as a heat ballast. The source is manufactured by wrapping the wire around the core in a threaded groove to form a helical coil with separated turns; unscrewing the core from the coil;



forming an oxide coating on the wire by holding the coil in an oxidizing environment and heating the coil by passing electric current through the wire; and, while forming an oxide coating on the wire, screwing the core onto the coil until all the turns thereof are engaged around the core.

3,737,626
ELECTRICAL FILTERED AIR HEATER
Oliver Thurston Davis, Route 1, Box 33, and Norman R. Jones, Route No. 1, both of Dunlap, Tenn.
Filed Feb. 8, 1972, Ser. No. 224,481
Int. Cl. H05b 3/00; F24h 3/06; F28f 19/00
U.S. Cl. 219—360 1 Claim

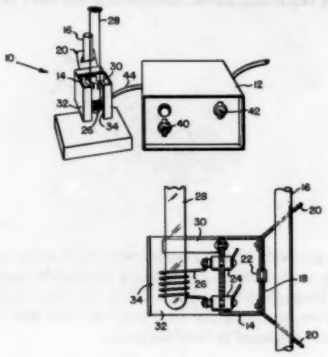


An electrical heater to produce clean and dry compressed air comprising a housing in which an electrical heating means is centrally mounted and is surrounded by a coiled tubing to which compressed air is admitted at one end and exited therefrom at the other end, thence passed through a filter and led therefrom to a point of use. The filter serves to remove moisture from the compressed air and has replaceable elements which can easily be changed. A temperature responsive sensing element is provided adjacent the coiled tubing to control the degree of energization of the heating unit and thus the temperature of the compressed air.

3,737,627
ELECTRIC TEST TUBE HEATER
Roland B. Willard; William J. Walsh, and John I. Larson, all of Dubuque, Iowa, assignors to Sybron Corporation, Rochester, N.Y.
Filed Nov. 9, 1971, Ser. No. 196,905
Int. Cl. H05b 3/00
U.S. Cl. 219—521 3 Claims

An electric test tube heater has a self-supporting, free-standing electric resistance heating coil of low mass attached to and electrically insulated from a support member adjustably mounted for vertical movement on an upright stand. The coil is wound about a vertical axis and has an internal diameter larger than the outside diameter of the test tube to be heated. A clamp is also fixed to the support member and is axially aligned with the coil for holding the test tube so as to locate the lower portion thereof within the coil. A channel-shaped reflective heat shield open at the top and bottom to allow insertion of the test tube into the heater and having a vertical slot at the front to permit visual inspection of the test

tube during the heating process is fixed to the support member and surrounds the coil. The support member is pivotally attached to the stand whereby the heating coil, clamp, test tube being heated and shield are all tiltable as a unit relative to the stand.

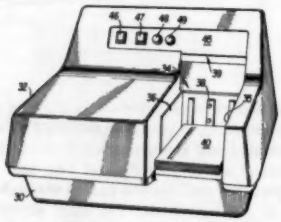


3,737,628

AUTOMATICALLY PROGRAMMED TEST GRADING AND SCORING METHOD AND SYSTEM

Leo L. Azure, Jr., Richland, Wash., assignor to Automatic Corporation, Richland, Mich.

Filed June 11, 1971, Ser. No. 152,211
Int. Cl. G09b *7/02*; **G06k** *7/14, 15/18, 19/06*
U.S. Cl. 235—61.6 E **17 Claims**



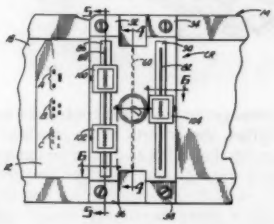
A test grading and marking method and system is automatically programmed by correct answer information presented on a program card, student answer selections for the corresponding problems as presented by successive student cards being compared with the stored correct answer information from the program card for grading and marking of the student card. Each set of related student cards is arranged in a stack preceded by a corresponding program card and a plurality of such sets of related student and program cards may be arranged in a stack and automatically fed through the apparatus, each new program card automatically reprogramming the memory with the correct answer information for the succeeding student cards of the associated set. The correct answer memory comprises a plurality of synchronized recirculating shift registers corresponding in number to the number of answer selections for each item of the program and student cards and each having a number of storage positions corresponding to the number of items on each such card. Gating circuitry assures accurate input and readout of data from the shift registers, synchronized with presentation of successive items from the program and student cards, respectively. Mark discrimination for selecting the darkest mark as the answer selection for each item is provided, or multiple answer selections may be accommodated. Marking of the student card includes edge marking to identify incorrectly answered problems for qualitative item analysis and marking of the correct answer selections for each incorrectly answered problem. Total score marking is effected in a preprinted scoring column as an edge mark further affording a scoring profile for an associated set of student cards. Error detection circuits assure proper sequencing of program and associated student cards and of correct card placement for feeding as well as altered student cards.

3,737,629

OPTICAL CODE READER

Gary G. See, Euclid, Ohio, assignor to Addressagraph-Multigraph Corporation, Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,191
Int. Cl. G06k *7/15*; **G01n** *21/30*; **G06k** *9/04*
U.S. Cl. 235—61.1 E **11 Claims**



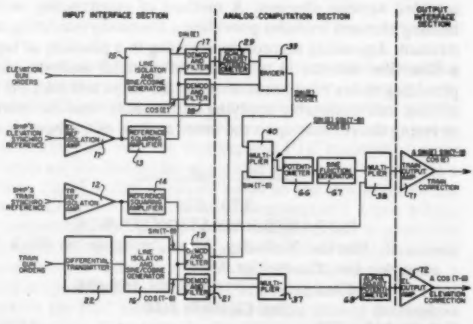
An optical code reader for reading a plurality of code groups on a single pass of a coded member, such as a tab card, rotatable disc or rotatable drum. The code reader includes light transmitting means, such as an array of fiber optic tubes, to illuminate a laterally extending surface area of the coded member. Light conveying means, such as arrays of fiber optic tubes, are provided for receiving light reflected from the coded member and transmitting the light to light sensors at remote locations. The light sensors may be adjustably positioned so as to be associated with different code groups located at different lateral positions on the code carrying member.

3,737,630

ROLLER PATH INCLINATION COMPENSATOR

James R. Cox, and Carlon N. Turner, both of Louisville, Ky., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 13, 1972, Ser. No. 234,016
Int. Cl. G06g *7/80*
U.S. Cl. 235—61.5 E **3 Claims**



A roller path inclination compensator for providing electrical signals for compensating errors in aiming a gun due to an

inclined gun mount. An inclined gun mount is measured to determine the roller path inclination angle and the location, in train, of the high point of the roller path. The inclination angle and the location of the high point are set into the compensator, and the compensator modifies course synchro orders to provide a train correction and an elevation correction which are applied in series with the train and elevation CT rotors in a gun mount.

3,737,631

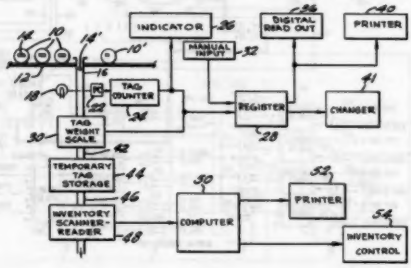
AUTOMATIC CHECKOUT AND INVENTORY CONTROL

Joseph I. Harris, Birmingham, Mich., assignor to Super Key Associates, Birmingham, Mich.

Continuation of Ser. No. 832,629, June 12, 1969, abandoned. This application July 12, 1971, Ser. No. 161,899

Int. Cl. G06k 7/00; G06m 7/02; G09f 3/02

U.S. Cl. 235—61.6 R **48 Claims**



Individual tags attached to shelf merchandise in a self-service supermarket have a detachable portion whose weight represents the price of the merchandise to which the tag is attached. The detachable tag portion also contains an inventory control number. At a checkout station, the detachable tag portions are removed from all merchandise selected by a customer and the detached tag portions are counted and weighed. The collective weight of the tags is used to give a real time indication of the total price of the customer's purchases. Subsequent to checkout, the detached tag portions are scanned individually to identify merchandise sold through the checkout station. This information is thereafter processed and used for inventory control.

3,737,632

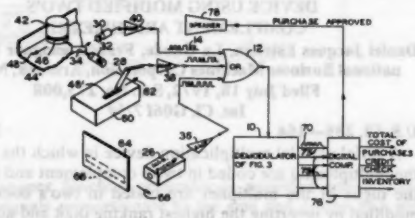
RATE ADAPTIVE NONSYNCHRONOUS DEMODULATOR APPARATUS FOR BIPHASE BINARY SIGNALS

Roland O. Barnes, 834 South 296th, Federal Way, Wash.

Filed Mar. 23, 1972, Ser. No. 237,256

Int. Cl. G06k 7/10; H03k 9/00; G11b 5/00

U.S. Cl. 235—61.11 E **17 Claims**



A demodulator apparatus is described for demodulating nonsynchronous binary input signals of the two level biphase type having a nonuniform bit rate. The demodulator comprises a reference means including a first digital counter which measures the width of successive input bits and produces time reference signals corresponding thereto so that the magnitude of such reference signal is automatically changed in response to variation in the bit rate. A comparator means including a second counter and discriminator is employed for comparing the reference signal of the preceding input bit against the time interval of the biphase information portion of the next succeeding input bit to determine whether it is a binary one or a binary zero. By employing this dynamic reference technique to compensate for varying bit rates in the nonsynchronous biphase input signal, one embodiment of the demodulator employing sixteen stage binary counters has been operated over a nonsynchronous bit rate range of 10 to 40,000 bits per second where the change in bit rate between adjacent bits can be between +20 and −35 percent.

3,737,633

PULSE COUNT CORRECTION METHOD AND APPARATUS

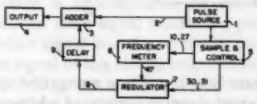
Claude Jean Collineau, Epinay sur Seine, France, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 7, 1971, Ser. No. 141,224

Claims priority, application France, May 20, 1970, 7018222

Int. Cl. H03k 21/30

U.S. Cl. 235—92 PL **26 Claims**



By comparing the voltage analog of the mean frequency of a part of a small pulse sample of a pulse train with each of a plurality of voltages that define a predetermined law, such as particle coincidence in a Coulter type of electronic particle analyzer, count correction pulses are derived for each pulse sample and are then added thereto to eliminate counting errors.

3,737,634

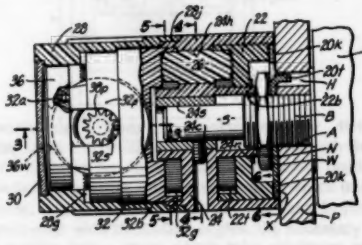
DIGITAL READ-OUT ACTUATOR-INDICATOR FOR MULTI-TURN SHAFT-ACTUATED INSTRUMENTALITIES

Robert E. Gaskill, Santa Ana, and Sydney W. Frey, Jr., Upland, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Jan. 10, 1972, Ser. No. 216,432

Int. Cl. G06m 1/22; G01p 13/00

U.S. Cl. 235—103 **4 Claims**



A knob-like actuator and indicator device for mechanical connection to a multi-turn instrument such as a potentiometer and effective upon manual rotation of a part thereof to

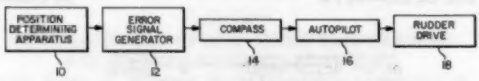
operate the instrument and concurrently through gearing and counting or revolution-indicating mechanism including double-indexing counting or number wheel means, effective to provide at the face end of the device a numerical decimal indication of complete revolutions and fractional revolutions of the instrument shaft from an end or zero position. Use of a double-indexing first counting wheel means reduces by 50 percent the gear ratio between the manually-rotated part of the knob, to thereby reduce by 50 percent gear wear and by a greater amount the tooth-impact at the counter wheel teeth. The first (fastest) number wheel is numbered through two complete zero-through-nine counts and rotates only one-half revolution in registering one-tenth revolution of the instrument shaft. Reduction of the gear ratio permits gross reduction of diameter of an effective actuator-indicator, and permits use of low cost, plastic parts.

3,737,635

CONSTANT LINE OF POSITION NAVIGATION SYSTEM

Charles E. Hastings, Newport News, Va., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Oct. 12, 1971, Ser. No. 188,196
Int. Cl. G06g *7/66*; G05d *1/00*
U.S. Cl. 235—150.26 **11 Claims**



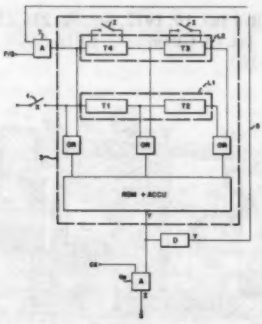
A constant line of position navigation system is disclosed in which an error signal is generated whenever a vessel carrying the system deviates from a predetermined line of position. This error signal is used to deflect the needle of the compass on the vessel to indicate to a helmsman or the autopilot that a correction in the heading of the vessel must be made to bring the vessel back onto the predetermined course.

3,737,636

NARROW BAND DIGITAL FILTER

Daniel Jacques Esteban, La Gaude, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 3, 1972, Ser. No. 249,832
Claims priority, application France, May 13, 1971, 7118314
Int. Cl. G06f *7/38*
U.S. Cl. 235—152 **3 Claims**



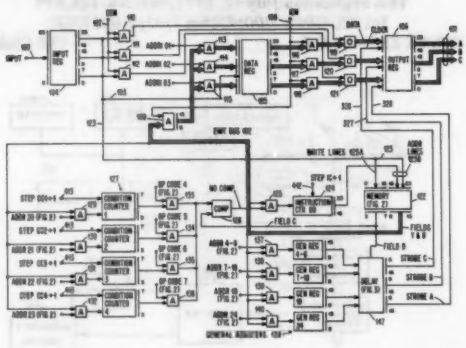
A narrow band digital filter is formed by sampling the output sequence of the filter means at a frequency F_i and recirculating the sampled sequence N times such that for the I^{th} recirculation $F_i = F/n^i$ where $i = 1, 2, \ldots N$; n is an arbitrary real positive integer and F is the digit rate of the sequence originally applied to the filter. Thus, the output sampling rate of the i^{th} circulation is $1/n$ times less than the i^{th}—1 circulation.

3,737,637

DATA GENERATOR

Richard F. Frankeny, and Joey K. Tuttle, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,205
Int. Cl. G01r *31/30*
U.S. Cl. 235—153 A **14 Claims**



Variable delay circuits generate output signals representing test signals having controlled timing widths. The output signals are generated by the variable delay circuits in accordance with data received from a memory under the control of a program of instructions stored in the memory. A fixed cycle clock initiates accessing of instructions one at a time. Each instruction in turn identifies control data which is supplied at times specified by a variable cycle clock. The delay circuits are assigned delay amounts and selected at times calculated to modify signals at their input desired amounts. The delay circuits are selected individually and in combination to give a wide variety of delay amounts. If desired, external input signals may be passed through the data generator with or without modification or may be stored in the memory for subsequent use in generating output signals. Signals resulting from these various operations may be freely interspersed. The output signals may be supplied directly to test a connected system or to an intermediate storage device such as magnetic tape which may subsequently be used to test the connected system.

3,737,638

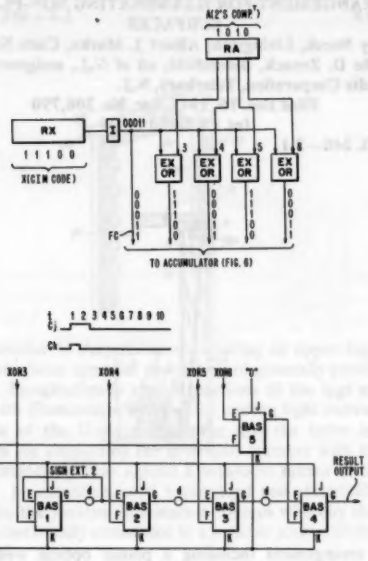
SERIES-PARALLEL MULTIPLICATION DEVICE USING MODIFIED TWO'S COMPLEMENT ARITHMETRIC

Daniel Jacques Esteban, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 18, 1972, Ser. No. 273,008
Int. Cl. G06f *7/54*
U.S. Cl. 235—164 **2 Claims**

A serial para lel multiplication device in which the digits of the multiplicand are coded in two's complement and in which the digits of the multiplier are coded in two's complement modified by inverting the highest ranking digit and appending another digit of predetermined value as the last digit, the appended digit having the same rank as the lowest ranking digit. The devie produces a series of partial products, each partial product being formed by logically combining the inverse of the i^{th} multiplier digit with each multiplicand digit. As a con-

sequence, each partial product digit assumes one value if the correspondingly ranking multiplicand and i^{th} multiplier digits

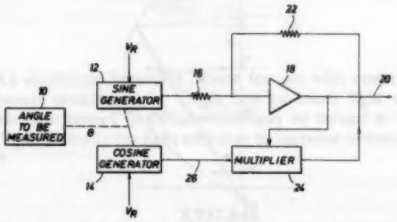


match and another value if they mismatch. The partial product is then corrected by adding to it the value of the i^{th} digit.

3,737,639
DERIVATION OF A TANGENT FUNCTION USING AN INTEGRATED CIRCUIT FOUR-QUADRANT MULTIPLIER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Bernard J. Bregman, Littleton, Colo.

Filed May 17, 1972, Ser. No. 254,177
Int. Cl. G06g 7/16, 7/22
U.S. Cl. 235—186 4 Claims

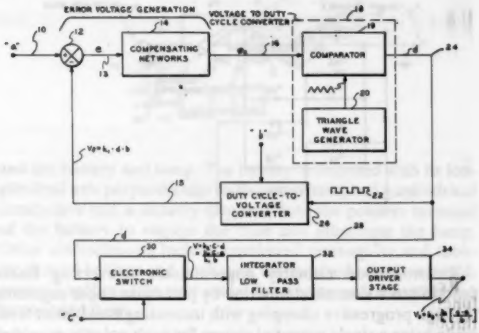


A tangent function generator is provided which utilizes input signals proportionate to the sine and cosine of a given angle. The equipment accomplishes a trigonometric manipulation which forms an output signal substantially independent of the input reference voltage but proportional to the tangent of the angle. The device uses a multiplier and operational amplifier.

3,737,640
ELECTRONIC FEEDBACK CONTROLLED TIME-DIVISION MULTIPLIER AND/OR DIVIDER

Robert K. C. Pao, Charlotte, N.C., and Willis R. Burgener, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1971, Ser. No. 213,482
Int. Cl. G06g 7/16
U.S. Cl. 235—195 21 Claims

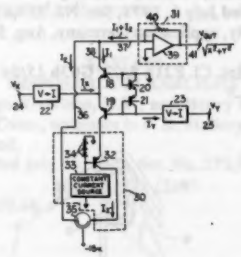


An electronic system for simultaneously multiplying and dividing analog signals which comprises a closed loop circuit in which the division is accomplished by introducing the dividend signal into the main signal translating portion of the circuit and the divisor signal into the feedback portion of the circuit. The output signal of this closed loop circuit has a varying duty cycle which is proportional to the quotient of these signals, and this quotient is multiplied by a third signal in an electronic switch which is connected to the output of the above closed loop circuit.

3,737,641
HYPOTENUSAL SQUARE-ROOTING FOR C.R.T. DISPLAY CORRECTIONS AND THE LIKE

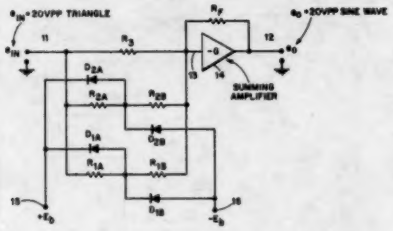
James B. Knitter, Westwood, Mass., assignor to Intronics Incorporated, Newton, Mass.

Filed Feb. 4, 1971, Ser. No. 112,662
Int. Cl. G06f 15/34
U.S. Cl. 235—197 22 Claims



Electronic corrections for pincushion-type distortions, promoting large and precise displays by short-length flat-faced large-area cathode ray tubes, are automatically produced at high speeds by miniature solid-state circuitry which introduces hypotenusal compensatory modifications into beam-deflection signals over wide deflection angles, the necessary square-rooting actions being those which take minimum electron-beam length into account and being developed by way of cooperating semiconductor devices whose characteristics and interactions force certain combined circuit currents to bear essentially square-root relationships to sums of squares of reference currents.

3,737,642
FUNCTION GENERATING USING PIECEWISE LINEAR APPROXIMATION
William C. Kulas, Hanover, Mass., assignor to Krohn-Hite Corporation, Cambridge, Mass.
Filed Aug. 9, 1971, Ser. No. 169,946
Int. Cl. G06g 7/28
U.S. Cl. 235—197 6 Claims



Resistor-diode circuitry approximates converting linear function to a sinusoidal function by piecewise linear segments through progressive clamping with increasing breakpoint level while using a single potential source for each polarity provided by an emitter follower that is arranged to compensate for the diode voltage drop.

ERRATUM

For Class 235—194 see:
Patent No. 3,737,686

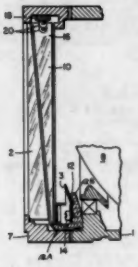
ERRATUM

For Class 240—2.18 see:
Patent No. 3,737,687

3,737,643
MULTIFLASH DEVICE, PARTICULARLY FLASHCUBE, WITH MECHANICAL STRIKING MECHANISM
Josef Lukas, and Dietmar Illig, both of Augsburg, Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany
Filed July 6, 1971, Ser. No. 159,613
Claims priority, application Germany, Aug. 5, 1970, P 20 38 948.4
Int. Cl. F21k 5/02; G03b 15/04
U.S. Cl. 240—1.3 9 Claims

The flashcube has a base plate, each corner of which is formed with a projecting stud. A coil spring has several turns wrapped around the stud, one end of the coil spring being bent into a hook-shaped upstanding projection, keeping the second end of the coil spring tensioned so that when the camera's release stud lifts the second end over the hook-shaped projection, the release of tension will cause the freed end to snap against the igniter tube of a flashlamp; the location of the springs and the studs being out of the way and not interfering with placement of standard reflectors.

3,737,644
ARRANGEMENT FOR ILLUMINATING NON-PLANAR SURFACES
Stanley Nocek, Livingston; Albert J. Marko, Colts Neck, and Leslie D. Zenack, Bloomfield, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.
Filed Dec. 16, 1971, Ser. No. 208,790
Int. Cl. G01d 11/28
U.S. Cl. 240—2.1 1 Claim



An arrangement including a planar optical wedge illuminated by a light source and transferring light energy to a prism which directs the light energy to a non-planar surface disposed behind the wedge and prism.

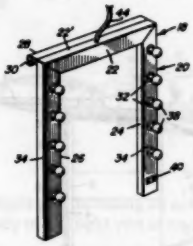
3,737,645
SHARP CUT OFF LIGHT BEACON
Wayne A. Kearsley, Chelmsford, Mass., assignor to Flash Technology Corporation of America, Nashua, N.H.
Filed May 15, 1972, Ser. No. 254,770
Int. Cl. F21v 11/02
U.S. Cl. 240—3 7 Claims

A light beacon structure including a reflector with a light source and a series of light stops mounted within the reflector. The reflector is a distorted cylindrical paraboloid type such that with its central axis horizontal, each point on the reflector projects a wedge of light with the bottom of the wedge approximately horizontal. The optical stops are positioned to cut off direct radiation from the source below the central axis of the reflector.

3,737,646
REMOVABLE PERIPHERAL LIGHT ASSEMBLY FOR BATHROOM MIRROR

Joseph M. Burrows, 3122 Lodwick Drive N.W., Warren, Ohio

Filed Oct. 15, 1971, Ser. No. 189,717
Int. Cl. F21v *33/00*
U.S. Cl. 240—4.2 4 Claims

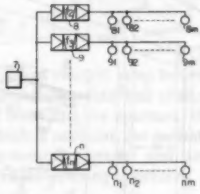


An inverted U-shaped frame including an upper bight portion from whose opposite ends a pair of generally parallel legs depend. Longitudinally spaced portions of the legs are provided with illumination sources for casting light outwardly of one side of the U-shaped member and the latter includes structure for supporting the U-shaped member with its other side substantially flush against a bathroom mirror or the like. Further, an extension cord is provided and electrically connected to the various illumination sources whereby the latter may be electrically connected to a suitable source of electrical potential.

3,737,647
ELECTRONIC LUMINOUS DEVICE

Yoshiyuki Gomi, Tokyo, Japan, assignor to Kabushiki Kaisha Chiyoda, Tokyo, Japan

Filed Sept. 1, 1971, Ser. No. 176,994
Claims priority, application Japan, June 25, 1971, 46/45707; Apr. 16, 1971, 46/23895
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W 4 Claims



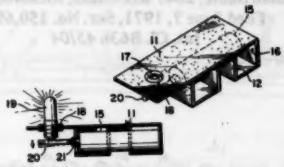
An electronic luminous device for use with costumes and personal ornaments, in which one or more light emission diodes are turned to ON continuously or turned to ON and OFF periodically for light emission to increase ornamental effect.

3,737,648
PACKAGING AND MOUNTING HOLDERS FOR ILLUMINATED GIFT PACKAGES, GREETING CARDS AND THE LIKE

Charles Franc, P.O. Box 36R, Wading River, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,711
Int. Cl. F21l *15/00*
U.S. Cl. 240—10.6 R 20 Claims

Packaging and mounting holders for the lamp and battery of an illuminated gift package, greeting card or ornament. In one embodiment, the holder is constructed from an elongated, planar, strip of nonconductive material having conductive foil affixed to one side and adhesive means to the other. The strip is creased or scored at selected points along its length, to allow bending of the strip, and has a plurality of circular apertures at selected positions for holding the battery and light bulb. Annular conductive members or rings are disposed in the apertures to insure proper electrical contact of the metallic strip



and the battery and lamp. The battery is disposed with its longitudinal axis perpendicular to the lamp base, and a cylindrical conductive rod is slidably disposed over the positive terminal of the battery to engage the base and illuminate the lamp. Other embodiments include combined rectangular and tubular-shaped holders and packages, constructed of either metal-coated cardboard or pure metal for storing and mounting the battery and lamp.

3,737,649
BATON-FLASHLIGHT

Norman C. Nelson, Chino, and Frank S. Patti, Covina, both of Calif., assignors to Kel-Lite Industries, Inc., Covina, Calif.

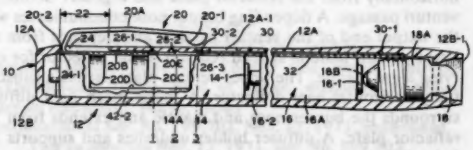
Filed July 27, 1972, Ser. No. 275,801
Int. Cl. F21l *7/00*
U.S. Cl. 240—6.42 5 Claims

A combination baton-flashlight including an elongated metal housing or barrel whose length is at least ten times its diameter, a number of batteries disposed in the housing forming a battery train, and an elongated metallic spacer block in one end of the housing, the spacer block and battery train being coupled in series to form a circuit through which current flows to an associated bulb means.

3,737,650
DISPOSABLE FLASHLIGHT

Gordon E. Kaye, Garrison, N.Y., and Henry Rogers Mallory, Greenwich, Conn., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

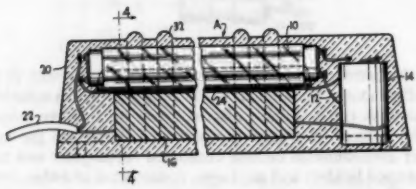
Filed July 18, 1972, Ser. No. 272,959
Int. Cl. F21l *15/00*
U.S. Cl. 240—10.66 16 Claims



A flashlight comprising a hollow shell housing, for two cells and a lamp, with the housing initially of two parts, each part serving as a collecting tray for components during manufacture, so the two shells when closed, with the components in

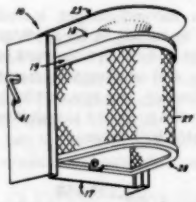
place, constitute the finished flashlight; and a mounting clip on the flashlight is movable to a selected one of three available positions, to serve as a switch to put the flashlight in "off," "intermittent' or "full on" operation.

3,737,651
NAVIGATION LIGHT
Harry Norman Shute, 2047 Reeveston, Richmond, Ind.
Filed June 7, 1971, Ser. No. 150,691
Int. Cl. B63b *45/04*
U.S. Cl. 240—7.5 **2 Claims**



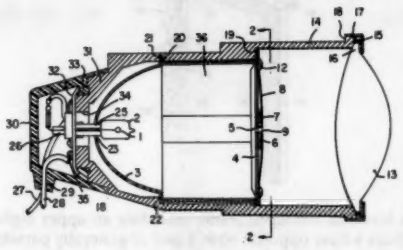
Waterproof navigation light comprising a fluorescent lighting unit embedded in a clear or colored transparent or translucent plastic.

3,737,652
GAS LIGHT WITH BUILT-IN MIXING CHAMBER
Stanley M. Loveless, Oshtemo, Kalamazoo County, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.
Filed July 23, 1971, Ser. No. 165,453
Int. Cl. F21s *13/02*; F23d *15/00*
U.S. Cl. 240—11 **16 Claims**



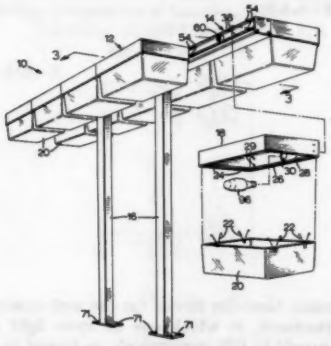
A gas lamp of simplified construction for mounting on a support, such as a wall or the like, by means of a mounting plate. A burner assembly comprises an upstanding reflector plate, a lower venturi plate and an upper venturi plate all joined together, the venturi plates extending substantially horizontally from the reflector plate and together defining a venturi passage. A depending burner nose communicates with the output end of the venturi passage and depends from the lower venturi plate in spaced relation to the reflector for carrying a gas mantle. The upper venturi plate carries a substantially horizontal heat deflector. A metal mesh light diffuser surrounds the burner nose and mantle and extends from the reflector plate. A diffuser holder underlies and supports the light diffuser. Means are provided for removably joining the light diffuser holder and the burner assembly to the mounting plate. A manually actuable gas valve is carried by the mounting plate behind the reflector and is provided with a nozzle which communicates through a notch in the reflector with the input end of the venturi for supplying gas to the burner nose.

3,737,653
AUTOMOTIVE HEADLIGHT
Orrick Howard Biggs, Beverly; Horace H. Homer, Arlington; Frederick A. Lougheridge, Manchester, and Arnold Westlund, Jr., Gloucester, all of Mass., assignors to Sylvania Electric Products Inc., Danvers, Mass.
Continuation of Ser. No. 787,481, Dec. 27, 1968, abandoned.
This application Feb. 14, 1972, Ser. No. 226,349
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **4 Claims**



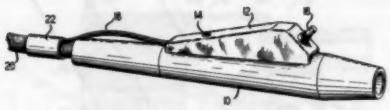
An automotive headlight or the like having a beam controlled by an opaque plate having therein an aperture is provided with a plate having a diffusing surface spaced forwardly somewhat from the opaque plate to reduce or remove the blue color which appears without the plate. The diffuse surface also smooths out the beam at its edges.

3,737,654
MODULAR LUMINAIRE
William L. Hawley, Rexdale, Ontario, Canada, assignor to Powerlite Devices Limited, Toronto, Ontario, Canada
Filed Feb. 8, 1972, Ser. No. 224,516
Int. Cl. F21v *21/00*
U.S. Cl. 240—52 R **15 Claims**



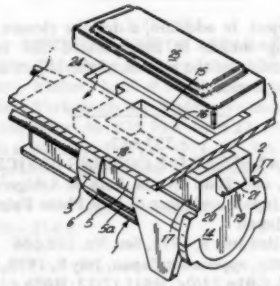
A modular luminaire assembly consisting of a longitudinal beam member, preferably generally U-shaped, and a plurality of lamp housings of a predetermined modular length mounted on and projecting outwardly from at least one side of the beam member. Lamp mounting means is located in each of the lamp housings and the beam has a length which is substantially equal to a whole number multiple of the modular length of the luminaire. Preferably the U-shaped beam member is in the form of an extrusion having a plurality of longitudinally extending mounting slots formed therein to provide a means for supporting the lamp housing and a means for mounting the beam on a suitable support.

3,737,655
LIGHT PEN
Frederick Lawrence Blendinger, Warren, and Donald Frank Littlefield, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Frederick L. Blendinger and Western Electric Company Incorporated, New York, N.Y., by said Donald F. Littlefield
Filed Mar. 8, 1971, Ser. No. 121,803
Int. Cl. F21v 33/00
U.S. Cl. 240—2 S 4 Claims



An improved light pen including an actuator switch which is affixed to the body of the light pen at an acute angle to its longitudinal axis.

3,737,656
TWO PART HOUSING FOR AN ELECTRICAL LAMP ASSEMBLY
Roberto Plana, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 20, 1971, Ser. No. 182,032
Claims priority, application Spain, Oct. 27, 1970, 162742
Int. Cl. F21v 17/00, 21/00
U.S. Cl. 240—151 4 Claims

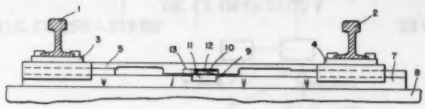


One part of a two part electric lamp housing has an aperture in a longitudinally extending side wall of the one housing part, and also has a wall bounding the aperture, the wall having projections, one of which is resilient, for mounting the housing in an aperture of a mounting panel and also for frictionally receiving a lens over the housing aperture.

3,737,657
GUIDE ELEMENT FOR PIVOTING RAILS
Ruthard Dohse, Essen-Bredeney, and Frank Klaus, Berlin, both of Germany, assignors to Elketra-Thermit GmbH, Berlin, Germany
Filed Jan. 13, 1972, Ser. No. 217,554
Int. Cl. E01b 7/14, 9/00
U.S. Cl. 246—392 3 Claims

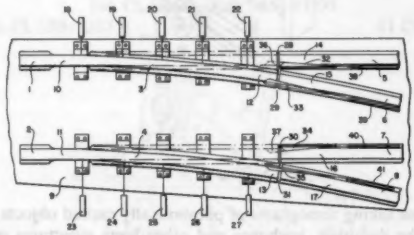
There is disclosed a guide element for setting or adjusting operations and for maintaining the end position of pivotal rails, particularly in the frog and deflecting areas, in wide-curve switch points.

The pivotal rails rest, by means of one of the known elastic rail attachments, on a tie-like slide carriage which is displaceable transversely to the direction of the track and which, in turn, is held in position in the vertical direction by a bracket or supporting plate, being secured to a base plate, by means of a sliding guide, and guided in the horizontal direction. One displacing element consisting of two oppositely rotatable slide rings is so mounted between the bracket or supporting plate and the slide carriage that the lower slide ring slidably engages in the guide way or path of the bracket or supporting plate



positioned parallel to the direction of the track. The upper slide ring slidably engages in the guide way or path of the slide carriage being positioned diagonally to the direction of the track and the lower slide ring is preferably connected with a pneumatically, or hydraulically, or electrically-actuated thrust setting element.

3,737,658
DEFLECTING DEVICE WITH GAPS LOCKED IN A WEDGE-TYPE MANNER
Ruthard Dohse, Berlin; Curt Edeling, Essen-Rellinghausen, and Josef Eisenmann, Munich, all of Germany, assignors to Elktro-Thermit GmbH, Berlin, Germany
Filed Aug. 25, 1971, Ser. No. 174,658
Claims priority, application Germany, Aug. 26, 1970, P 20 42 233.7
Int. Cl. E01b 7/08
U.S. Cl. 246—448 10 Claims



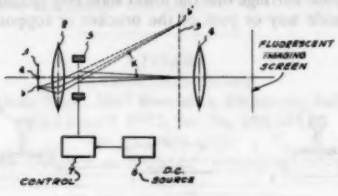
This invention relates to a deflecting device for switches which can be negotiated at high speeds free from vibrations and shocks in the branch rail comprising tongue means, wedge means for closing the gaps between said tongue means and connecting rails, and means for moving said wedge means into and out of the closed position.

ERRATUM
For Class 250—49.5 E see:
Patent No. 3,737,617

3,737,659
FIELD OF VIEW ADJUSTING DEVICE
Takashi Yanaka, Hino-shi, Tokyo, and Kohei Shirota, Akishima-shi, Tokyo, both of Japan, assignors to Nihoa Denshi Kabushiki, Tokyo, Japan
Continuation of Ser. No. 199,702, Nov. 17, 1971, abandoned.
This application Nov. 17, 1971, Ser. No. 199,702
Claims priority, application Japan, Apr. 8, 1969, 44/27401
Int. Cl. H01j 37/26; G01n 23/00
U.S. Cl. 250—49.5 A 6 Claims

Field of view adjusting device for use in electron microscopes or the like having a mechanical sample adjusting

means and electron deflecting means disposed in or at the rear of an objective lens, coarse adjustment being carried out by



the mechanical moving means and fine adjustment by the electron deflecting means.

3,737,660

APPARATUS FOR TAKING TOMOGRAMS OF PARABOLICALLY CURVED OBJECTS

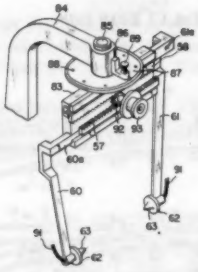
Shoichi Ando, Shibuya-ku, Tokyo-to, and Shinji Yoshioka, Ichikawa-shi, both of Japan, assignors to Hida Denki Kogyo Kabushiki Kaisha, a/k/a Mida Electronic Apparatus Industrial Co., Ltd., Tokyo, Japan, a part interest

Filed Oct. 7, 1970, Ser. No. 78,666

Claims priority, application Japan, Feb. 19, 1970, 45/16790; Dec. 12, 1969, 44/118085; Dec. 1, 1969, 44/114226; Oct. 9, 1969, 44/80982

Int. Cl. G03b *41/16*

U.S. Cl. 250—50 **6 Claims**



For taking tomograms of parabolically curved objects such as the dentition, jawbones and other bony structures of the head and dento-facial region, there are provided an X-ray tube and a radiographic film holder at both ends of a turnable arm. This arm is furnished with a plurality of shafts alternately serving as a pivot therefore, in such a manner that the X-ray tube supported at one end of the arm turns round a parabolically curved object at an unvarying distance therefrom, while radiating X-rays which traverse the object to impinge upon the radiographic film carried by the aforesaid holder turning in coordination with the turn of the arm. There are also disclosed herein a device for holding the head of a patient, a device for minute adjustment of ear-rods and the like for use in positioning the head, and a device for modification of the image density of X-rays traversing the head in readily penetrable directions.

3,737,661

PORTABLE X-RAY RADIATION SHIELDING DEVICE

Robert L. Applegate, 13649 17th Avenue S.W., Seattle, Wash.

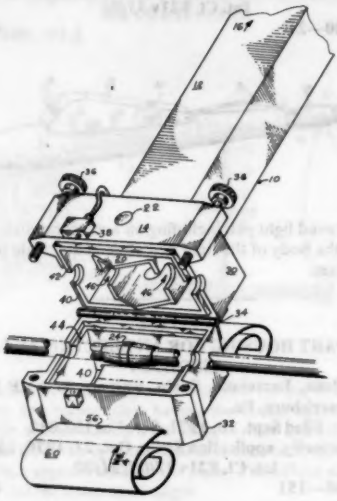
Filed Mar. 3, 1971, Ser. No. 120,591

Int. Cl. G03b *41/16*

U.S. Cl. 250—65 R **9 Claims**

A shielded x-ray adapting device for a portable x-ray apparatus comprising a collimator and a thereon rotationally and pivotally mounted container.

The container has an upper part and hingedly attached edge overlapping bottom part which in a closed condition with one another provide two opposed apertures conforming with the periphery of an object so that a portion of the object to be x-rayed can be completely enclosed. The bottom part has opposed slots for feeding x-ray film underneath the enclosed portion of the object. In addition, a definite closure switch and safety warning means is incorporated for insuring the complete enclosure of the portion of the object during the x-ray radiation operation.



3,737,662

HEAT-SENSITIVE COPYING DEVICE

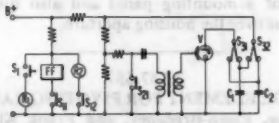
Shinichi Yabe, and Tomi Okada, both of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Fuim Co., Ltd., Kanagawa, Japan

Filed July 8, 1971, Ser. No. 160,666

Claims priority, application Japan, July 8, 1970, 45/68280

Int. Cl. G01n *23/04*; H01j *37/22*; H05b *41/14*

U.S. Cl. 250—65 T **1 Claim**



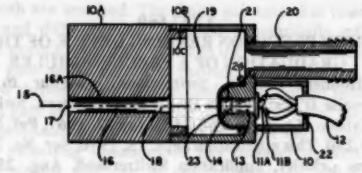
Disclosed herein is an improved heat sensitive copying device operable to provide rapid, very short duration, light flashes from a flash lamp providing the heat necessary for accomplishing the copying operation. The rapid succession of flashes is enabled by the use of two condensers alternately coupled to the flash lamp and a charging circuit through a switching circuit. While a charged condenser is being discharged to light the lamp, the other condenser is being charged. When the condenser coupled to the lamp has discharged the switch means can reverse the condenser connections to couple the just charged condenser to the lamp.

3,737,663

RADIATION PATH TERMINATION HOUSING

George F. Quittner, 1780 Cumberland Road, Cleveland, Ohio

Continuation-in-part of Ser. No. 68,330, Aug. 31, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 234,981
Int. Cl. G01n 21/26
U.S. Cl. 250—83.3 H 17 Claims



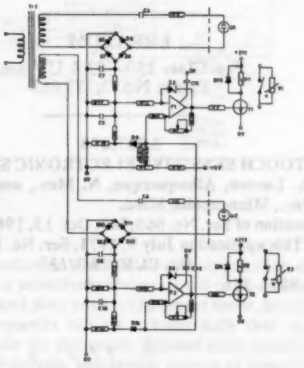
Disclosure of a housing for both the transmitting and receiving transducers of opto-electronic systems. Clean compressed air is released in a passage between the transducer and the bulk of the light path at sufficient axial velocity to keep the transducer's radiation transmissive surface clean. A filter may be used between the transducer and the pneumatic entrance orifice, whose transmissive surface is also protected by the same axial air velocity, but which can easily be replaced if, in long term use, it accumulates condensates and other vestigial contamination of the supplied, filtered air. The housing also serves to make the transuducer more robust.

3,737,664

BURNER MONITOR APPARATUS

Jerk Gunnar Oldenburg, Genarp, and Allan Yngve Teodor Rosenberg, Malmo, both of Sweden, assignors to Kockums Mekaniska Verkstands AB, Malmo, Sweden

Continuation of Ser. No. 818,293, April 22, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,616
Claims priority, application Switzerland, Apr. 29, 1968, 5777/68
Int. Cl. H01j 39/12
U.S. Cl. 250—214 R 5 Claims



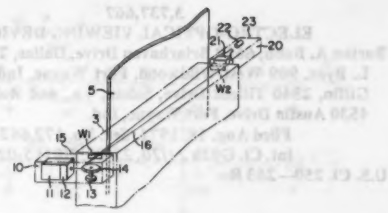
In a burner monitor apparatus comprising light intensity responsive means and comparator means, the light intensity responsive means are coupled to said comparator means for actuating the reference voltage of all said comparator means, whereby all the comparator means are responsive to all the light intensity responsive means.

3,737,665

METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING DEFECTS AND IRREGULARITIES IN GLASS SHEET

Yasuyuki Nagae, Sakai-shi, Osaka, Japan, assignor to Central Glass Company, Limited, Yamaguchi-ken, Japan

Filed Oct. 20, 1971, Ser. No. 191,030
Int. Cl. G01h 21/32
U.S. Cl. 250—219 DF 22 Claims



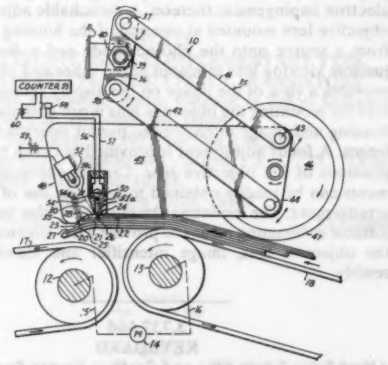
Method for automatically detecting defects and irregularities contained in or on the surface of glass sheet. The method includes scanning laser beams on the glass sheet and with a laser detector, detecting the presence of defects by measuring the decrease of light input reaching the laser detector as a result of dispersion of the laser beam by the defects. Apparatus for carrying out method.

3,737,666

COUNTER FOR A STREAM OF OVERLAPPED ARTICLES

Lyle V. Dutro, 1660 Carriage House Road, Pasadena, Calif.

Filed Apr. 15, 1971, Ser. No. 134,302
Int. Cl. G06m 7/00; B65g 43/00
U.S. Cl. 250—223 R 11 Claims



A mechanism for counting the number of articles in a stream of overlapped articles which move past a datum point. Each article has a leading edge that presents a step as it passes the datum point and, except for the first article, there is an adjacent surface of an adjacent article just upstream from it. A base carries drive means for driving the stream past the datum point. A sensor is mounted at the datum point which is responsive to the change in a physical condition, such as light intensity, fluid pressure, or the like. A change of condition is derived by observing with the sensor the said physical condition in the region between the step and its adjacent surface, and impeding the said observation, such as by blocking off the sensor from said region. The device includes a deflector surface to flex the article and thereby open such region for each step. In one embodiment, a parallelogram movement is mounted to the base with a mobile portion adapted to move toward and

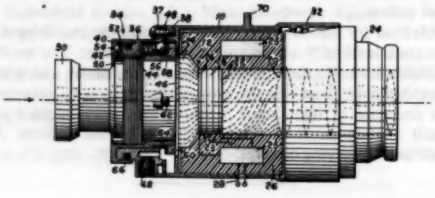
away from the base. A wheel is mounted to the mobile portion and is adapted to roll along the stream of articles so as to establish the elevation of the mobile portion relative to the said articles. The sensor is carried by the mobile portion at the datum point, and the number of articles is counted as a function of the number of steps (i.e., of the leading edges of the approaching articles) which pass the datum point. A counter is actuated by the sensor to count the number of steps.

3,737,667

ELECTRO-OPTICAL VIEWING DEVICE

Burton A. Babb, 6618 Briarhaven Drive, Dallas, Tex.; Edward L. Byer, 909 West Wildwood, Fort Wayne, Ind.; George S. Giffin, 2840 Titleist Drive, Salem, Va., and Robert E. Rife, 4530 Austin Drive, Fort Wayne, Ind.

Filed Aug. 18, 1971, Ser. No. 172,662
Int. Cl. G02b *21/20, 23/00;* H01j *5/02*
U.S. Cl. 250—213 R **10 Claims**



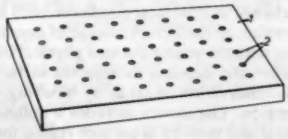
An image intensifier tube and power supply elements are rigidly mounted and axially disposed within a housing to form an integral unit. The image intensifier includes a photocathode at one end, emitting electrons is response to light radiation, an intermediate electron multiplier, and a display screen at the other end displaying an image in response to electron impingement thereon. A detachable adjustable focus objective lens mounted at one end of the housing directs light from a source onto the photocathode and a detachable adjustable viewing lens mounted at the other end of the housing provides a view of the image on the display screen. The structure for mounting the objective lens is pre-collimated with the housing and image intensifier to permit interchangeability of lenses. A focus adjustment is provided between two selective positions of the objective lens. Critical collimation requirements can be readily obtained to facilitate use of a binocular arrangement. The mounting structure may also include an adjustable collimating means to provide axial alignment between the objective lens, image intensifier and viewing lens assembly.

3,737,668

KEYBOARD

Alfred Brian Edwin Ellis, and Geoffrey Vernon Bunton, both of Chelmsford, England, assignors to The Marconi Company Limited, London, England

Filed July 23, 1971, Ser. No. 165,092
Claims priority, application Great Britain, July 30, 1970, 36,971/70
Int. Cl. G06m *7/00;* G08c *1/00;* H01j *39/12*
U.S. Cl. 250—220 R **9 Claims**



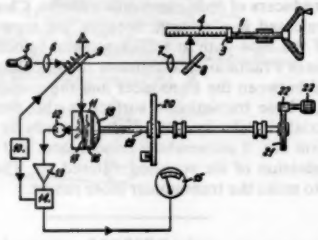
The invention provides a control system for supplying instructions to a computer or the like. An opaque panel has several transparent areas. A number of conductors are provided, which pass under each of the opaque areas in turn, and at each of these areas there are photo-sensitive elements associated with a unique selection of the number of conductors. When the light passing through a transparent area varies the response of the photo-sensitive elements is such that signals are provided on the unique selection of conductors associated with that area.

3,737,669

HIGH PRECISION READING DEVICE OF THE GRADUATION OF A PRECISION RULER

Peter Holmes, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments De Physique, Geneva, Switzerland

Division of Ser. No. 640,212, May 22, 1967, Pat. No. 3,590,260. This application Sept. 15, 1970, Ser. No. 72,493
Claims priority, application Switzerland, Aug. 25, 1966, 12343/66
Int. Cl. G01b *11/04;* G01d *5/34*
U.S. Cl. 250—231 R **3 Claims**



A device for reading the graduations of rulers with high precision, including a photoelectric microscope having an optical sighting device, in which the measuring field on either side of a fixed centered position is periodically scanned and a photoelectric cell receives rays from the scanned surface of the ruler and delivers a train of optical pulses. In the focal plane of the ruler and on the optical path of the microscope, a cylindrical diaphragm is disposed which has a helical slot movable between plural positions corresponding to portions of the measuring field centered on different scale markings of the ruler so as to give a non-recurrent reading or optical signal indicative of a portion of an interval between two scale markings on the ruler.

ERRATUM

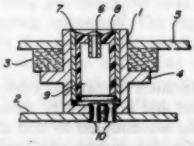
For Class 250—83.4 UV see:
Patent No. 3,737,685

3,737,670

TOUCH SENSITIVE ELECTRONIC SWITCH

Willis A. Larson, Albuquerque, N. Mex., assignor to Magic Dot, Inc., Minneapolis, Minn.

Continuation of Ser. No. 865,760, Oct. 13, 1969, abandoned. This application July 9, 1971, Ser. No. 161,948
Int. Cl. H01h *3/12*
U.S. Cl. 307—116 **14 Claims**



In order to provide sensitive, touch responsive electronic switching, a pair of electrodes disposed in a unique configura-

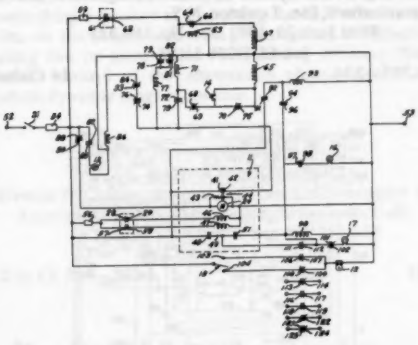
tion are coupled to a high gain amplifier such that relatively high resistance bridging across the electrodes will result in a positive switching condition at the output terminals of the high gain amplifier. In a first preferred embodiment of the invention, the pair of electrodes comprises a first centrally disposed electrode encompassed by a second, circular electrode disposed concentrically to, but longitudinally offset from the first electrode. Thus, the pair of electrodes substantially conform to the contour of an operator's finger which sets up a relatively high resistance path between the two electrodes when both are touched. The finite galvanic skin resistance is sensed and differentiated from the substantially infinite resistance normally existing between the two electrodes by high current gain amplification to provide a sharp change in current flow through a load connected to the output terminals of the high gain amplifier. The sharply differentiated state of the output terminals of the high gain amplifier may be utilized to control switching functions in any manner desired in subsequent stages. For use in environments in which the atmosphere may be contaminated or which may require the use of gloves by the switch operators, a membrane which has, on its underneath side, a conductive coating, is disposed over the pair of electrodes to perform the bridging function when the membrane is pressed against the electrodes.

3,737,671

DEMAND CONTROLLER

Bernard T. Davis, Evergreen Park, Ill., assignor to Raymond C. Wells and Ralph E. Wells, Power Lake, Wis., part interest to each

Filed May 18, 1972, Ser. No. 254,455
Int. Cl. H02h *3/42*
U.S. Cl. 307—126 **9 Claims**



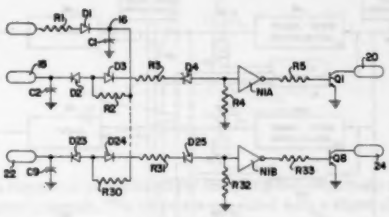
A demand controller which allows the application of power to be units to be selectively disconnected so as to assure that the power demand does not exceed preset limits. Since electrical power companies bill on a basis such that additional charges are made for maximum demand rates occurring during monitored intervals, substantial savings in power bills can be made by limiting the maximum demand. The present invention monitors the actual demand and compares it with the theoretical ideal maximum demand and disconnects loads when the actual demand exceeds the theoretical ideal demand over a standard time period. Provisions are made for synchronizing the demand controller with the time interval utilized by the power company to assure accurate control of the billing rates.

3,737,672

LOW-LEVEL LOGIC PROTECTION INTERFACE

Frank W. Hill, Moline, and Garland E. Fleser, East Moline, both of Ill., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed June 4, 1971, Ser. No. 150,016
Int. Cl. H02h *7/20*; **H03k** *5/08, 17/74*
U.S. Cl. 307—202 **4 Claims**



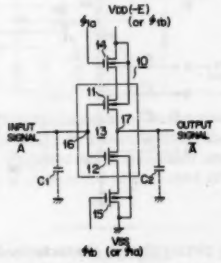
A low-level logic protection interface deriving operating potential from alternating-current line voltage is provided for coupling low-voltage, direct-current, detector signals of the order of zero to 12 volts, for example, to solid state control circuits. The interface serves to provide at least 12 volts noise immunity in such control circuits and to protect the control circuits against damage by the accidental connection of the alternating-current line as well as to protect against momentary high voltage transients. An inverter integrated circuit and an output transistor are provided with a back-biased diode and a zener diode interposed in the input to the inverter integrated circuit. Consequently, with a high positive input from the alternating-current line circuit, the output transistor cannot be turned on. With high positive input the diode is back-biased and with negative input the voltage applied to the zener diode is too low to cause the zener diode to conduct.

3,737,673

LOGIC CIRCUIT USING COMPLEMENTARY TYPE INSULATED GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Apr. 22, 1971, Ser. No. 136,536
Claims priority, application Japan, Apr. 27, 1970, 45/35654; Mar. 3, 1971, 46/10785
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—205 **12 Claims**



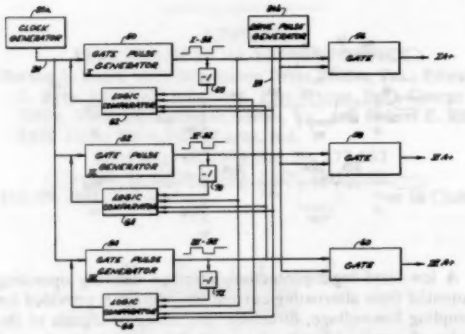
A logic circuit using complementary type IGFET's which comprises an inverter formed of complementary IGFET's and two switching IGFET's for controlling said inverter upon receipt of clock pulses, one of said switching IGFET's being an N channel type and connected to an N channel IGFET of the inverter and the other being a P channel type and connected to a P channel IGFET of the inverter.

3,737,674

MAJORITY LOGIC SYSTEM

Luther C. Butler, Jr., Garden Grove, Calif., assignor to Lorain Products Corp., Lorain, Ohio

Filed Feb. 5, 1970, Ser. No. 8,875
Int. Cl. G06f 11/08; H03k 19/42
U.S. Cl. 307—204 21 Claims



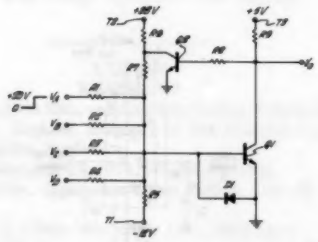
Each of three redundant multiphase signal generating circuits provides a six phase square wave modulated driving pulse train that is adapted for driving the gates of a number of inverters of a standby power supply system. For each of the six phases of each channel, a simultaneous majority logic is employed to enforce agreement among like phase square waves of the several channels. Each channel operates independently of each other channel but monitors the outputs of the other channels. When and only when an individual channel finds itself in disagreement with two other channels, then such individual channel forces itself into agreement with the others. Thus three redundant six-phase signals are retained if the trigger input to one channel is lost. Even with total loss of one channel, the remaining two will continue normal operation.

3,737,675

LATCHED GATING CIRCUIT

Robert Bruce Campbell, Los Angeles, Calif., assignor to Lear Siegler Inc., Santa Monica, Calif.

Filed Dec. 15, 1971, Ser. No. 208,346
Int. Cl. H03k 17/30, 3/295, 19/42
U.S. Cl. 307—211 11 Claims



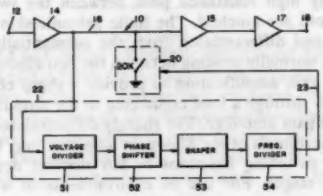
A latched gating circuit that is characterized by remaining in an "enabled" state until removal of all inputs initially required to switch the circuit to the "enabled" state, is disclosed. The circuit includes a gating transistor which is rendered conductive in response to the application of input signals to preselected ones of the input terminals of the gating circuit. A latching transistor is connected in a feedback arrangement between the gating transistor and the input terminals to maintain the gating transistor conductive until all of the input signals are removed.

3,737,676

LOW PHASE NOISE DIGITAL FREQUENCY DIVIDER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and George F. Lutes, Jr., South Gate, Calif.

Filed Nov. 18, 1971, Ser. No. 199,957
Int. Cl. H03k 21/00
U.S. Cl. 307—220 5 Claims



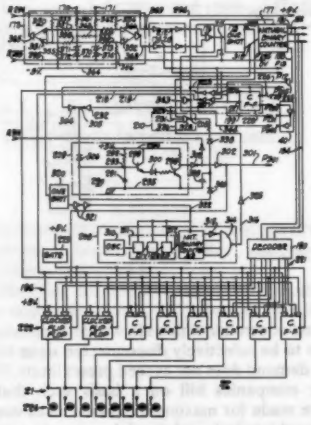
A low phase noise frequency divider is disclosed comprising a gating arrangement which supplies selected portions of an input reference signal to be divided to a tuned circuit without any phase noise due to the gating action. The arrangement which in one embodiment consists of a FET is connected to the tuned circuit input to short out the input except when the input reference signal amplitude crosses ground level in a positive direction and a gate enabling signal is present at the gate electrode of the FET. The gate-enabling signal alone does not decouple the tuned circuit input from ground, therefore phase noise, due to the leading and trailing edges of each gate-enabling signal, is substantially eliminated.

3,737,677

MULTIPLEXER NEUTER DETECTOR

Werner P. E. Huebner, Toronto, Ontario, and Robert G. Long, Scarborough, Ontario, both of Canada, assignors to D.D.T. Communications, Inc., Lewiston, N.Y.

Filed June 30, 1971, Ser. No. 158,333
Int. Cl. H03k 5/153
U.S. Cl. 307—234 14 Claims



A multiplexer receiver system neuter detector is disclosed for use in a multiplexer having a transmitter system and a receiver system. Transmission means between the transmitter and receiver systems transmits time multiplexed signals in a message pulse train. The multiplexed signals are provided in a first train of pulses and a complementary second train of pulses on first and second lines. The receiver system has collector means to collect the pulses from the two lines into a recon-

stituted pulse train containing one bit for each unit of time and there is a neuter period of the absence of pulses between message pulse trains in this reconstituted pulse train. The neuter detector includes an integrator with a means to charge a capacitor and a means to discharge the capacitor. The capacitor is charged intermittently between pulses in the message train and is discharged intermittently during the pulses in the message train. Accordingly, in the reconstituted pulse train when there are no pulses, the capacitor charges to a voltage level causing conduction of a transistor amplifier means to have a change in the output thereof signifying the existence of the neuter period.

3,737,678

LIMITERS FOR NOISE REDUCTION SYSTEMS

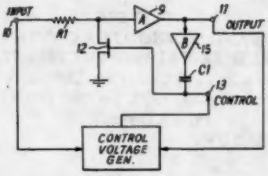
Ray Milton Dolby, and David Peter Robinson, both of London, England, assignors to Dolby Laboratories Inc., New York, N.Y.

Filed Jan. 19, 1971, Ser. No. 107,624

Claims priority, application Great Britain, Jan. 23, 1970, 3,351/70

Int. Cl. H03k *17/56*

U.S. Cl. 307—237 **4 Claims**



Limiters are known utilizing a shunt FET rendered conductive by a smoothed control signal to attenuate a signal. In this invention distortion is reduced by effecting positive feedback of half of the FET output voltage via a control signal smoothing capacitor or by putting the FET across a balanced line on the output side of a phase splitter. Furthermore, by using two or more shunt FETs having different thresholds, better control of the attenuation characteristics over the whole dynamic range is possible.

3,737,679

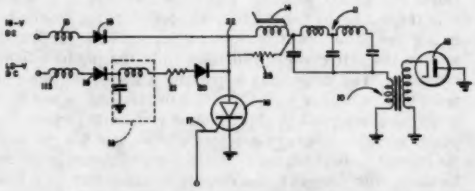
RADAR MODULATOR

George P. Cooper, Corona Del Mar, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Feb. 4, 1972, Ser. No. 223,651

Int. Cl. H03k *17/72, 1/00*

U.S. Cl. 307—252 J **10 Claims**



In a silicon-controlled-rectifier type switched or triggered pulse modulator, means for effecting an energy level reduction for a given "current-time" product associated with soaking the silicon-controlled rectifier which switches the main pulse-forming network. An auxiliary pulse-forming network is diode-coupled to an auxiliary charging choke and diode coupled to the input of a main delay reactor, the network response time being matched to the delay time of the delay reactor of the pulse modulator.

3,737,680

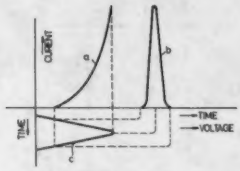
GATE CIRCUIT

Kozo Uchida, c/o Iwasaki Tsushinki Kabushiki Kaisha, 710 Kugayama 2-chome, Suginami-ku, Tokyo, Japan

Continuation of Ser. No. 752,209, Aug. 13, 1968, abandoned. This application June 24, 1971, Ser. No. 156,496

Int. Cl. H03k *17/00*

U.S. Cl. 307—257 **16 Claims**



An improved gate circuit for sampling the amplitude of high frequency signals. The circuit is provided with a shunt element and/or a diode for conducting the gate pulses so as to apply the gate pulses to the connecting point between diodes of a series circuit connected between an output terminal and the high frequency signal, thereby preventing the distortion of the waveform originated by the reflection of the measuring signal. Also disclosed is an improved circuit wherein a capacitor having a value of at least 300 pf is coupled from a point of the series circuit to ground, thereby preventing a leakage signal from appearing at the output terminal. These combined improvements yield better high frequency characteristics for the gate circuit.

3,737,681

CIRCUIT FOR GENERATING PULSES

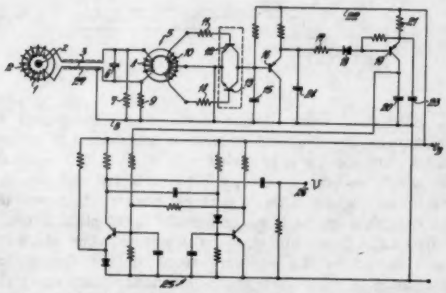
Dieter Rothermel, 7313 Reichenbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 29, 1970, Ser. No. 76,360

Claims priority, application Germany, Oct. 18, 1969, P 19 52 604.6

Int. Cl. H03k *17/56*

U.S. Cl. 307—246 **0 Claims**



A winding inductively coupled to the spark plug wire is connected to the primary of a transformer, the center tap secondary of which is connected to transistor amplifiers, the output of which latter is connected to the input of a monostable multivibrator.

3,737,682

TRIGGERED FLIP-FLOP

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

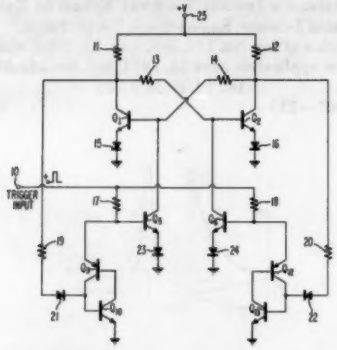
Filed Feb. 10, 1972, Ser. No. 225,045

Int. Cl. H03k *3/286*

U.S. Cl. 307—291 **14 Claims**

A bistable multivibrator (flip-flop) including gating means for applying trigger signals to the flip-flop to effect the trigger-

ing thereof without the use of steering capacitors. The gating



means includes complementary semiconductor devices which achieve a memory type function.

3,737,683

BUCKET BRIDGE DELAY LINE WITH ERROR COMPENSATION

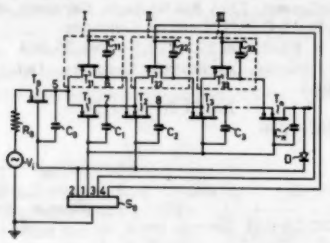
Frederik Leonard Johan Sangster, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 88,672, Nov. 12, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,365

Claims priority, application Netherlands, Sept. 25, 1970, 7014137

Int. Cl. H03k *17/26*

U.S. Cl. 307—293 **4 Claims**



A capacitive delay device comprising a sequence of capacitances, in which information is transferred by charge transfer. The device is provided with at least one auxiliary store which has been connected between a first and a second capacitance, whilst after a charge transfer between the capacitances a residual charge transfer takes place between the first capacitance and the auxiliary store, after which the charge stored in the auxiliary store and in the second capacitance is transferred to a capacitance succeeding the second capacitance.

3,737,684

SYSTEM FOR COMPENSATING FOR DRIFT IN SEMICONDUCTOR TRANSDUCERS

Hiroshi Kuno, Okazaki-shi; Kenji Suzuki, Hekkai-gun, Aichi, and Mineo Ishikawa, Kariya-shi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Toyoda Koki Kabushiki Kaisha, Nagoya, Japan

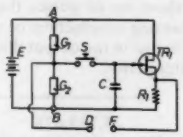
Filed Sept. 29, 1971, Ser. No. 184,804

Claims priority, application Japan, Sept. 30, 1970, 45/86134

Int. Cl. H01v

U.S. Cl. 307—308 **8 Claims**

A drift compensating system includes a detecting circuit having at least one semiconductor element to generate an output in proportion to a physical quantity to be applied thereto, a first terminal for providing the output, a switching element, a memory circuit connected to the first terminal through the switching element for memorizing the output upon closure of the switching element, and a second terminal connected to the



memory circuit. Upon closure of the switching element the output is applied to the memory circuit to render the first and second terminals to be at the same potential to thereby cancel any drift. Upon a subsequent opening of the switching element, a potential difference appears between the terminals in accordance with any change of the output.

3,737,685

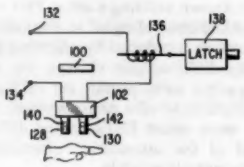
APPARATUS AND METHOD FOR CONTROLLING AN ELECTRICAL POWER CIRCUIT

William L. Sharp, Jr., 117 Center St., Clinton, N.J.

Filed Aug. 11, 1971, Ser. No. 170,811

Int. Cl. G06m *7/00*

U.S. Cl. 250—83.3 UV **7 Claims**



Apparatus is herein described for controlling an electrical power circuit in response to the electronic detection of a photo reflective substance on a predetermined portion of the human body. More specifically, a guide device is provided for positioning a portion of the human body in a predetermined location for the application of a photo reflective substance to a predetermined portion thereof. A source of radiation is provided and photo sensitive, electrical circuitry is positioned with respect to the last mentioned portion of the human body so that the photo sensitive circuitry becomes conductive upon sensing the reflection of radiation from the photo reflective substance. The dispensing apparatus for applying the photo reflective substance and the mechanical guiding means for positioning the portion of the human body with respect to the photo sensitive circuitry are arranged so that the portion of the human body concerned is relatively positioned in the same location, with respect to the dispensing apparatus, as it is with respect to the photo reflective sensing apparatus. In this manner, the photo sensitive circuitry is actuated only when radiation is reflected from the predetermined portion of the human body.

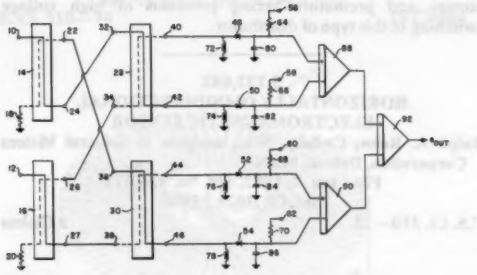
In one feature of the invention, the source of radiation includes ultraviolet rays having a wave length in the range of 3,000 to 4,000 angstroms.

In another feature of the invention, monochromatic filtering is provided whereby the photo sensitive circuitry is only actuated in response to the sensing of a particular color of photo reflective substance.

3,737,686
SHIELDED BALANCED MICROWAVE ANALOG MULTIPLIER

James E. Swanekamp, Beltsville, and John H. Malloy, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 23, 1972, Ser. No. 265,933
Int. Cl. G06g 7/16, 7/22
U.S. Cl. 235—194 5 Claims

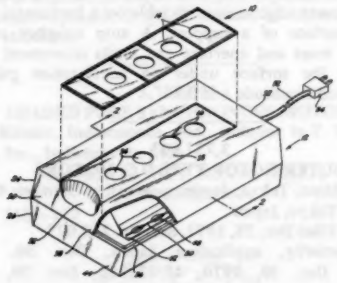


A passive, four quadrant, balanced analogue multiplier for use in the microwave and RF region, including four backward-wave, 3 db quadrature couplers. The couplers are interconnected whereby four output signals are supplied to four respective diodes of the mulitplier from the two input signals to be multiplied for parallel signal processing.

3,737,687
ILLUMINATION DEVICE

Curtis E. Miller, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 15, 1972, Ser. No. 253,523
Int. Cl. F21l 1/00
U.S. Cl. 240—2.18 7 Claims



A darkfield type illumination device for performing slide agglutination tests or the like. The device comprises a casing having an opening therein. A transparent slide having a reaction area thereon is mounted on the casing with the reaction area positioned over the opening. A nonreflective surface is provided in the casing below the opening. Illumination from the light source is transmitted in two paths extending from opposite sides of and below said opening upwardly at an angle to the opening. Such angle is between about 30° and 35° to provide the maximum benefit of particle illumination of material in the reaction area of the slide and darkfield effect of the device. Preferably the two paths of illumination pass through only corresponding one-half sections of the reaction area of the slide to provide enhanced illumination of the particles.

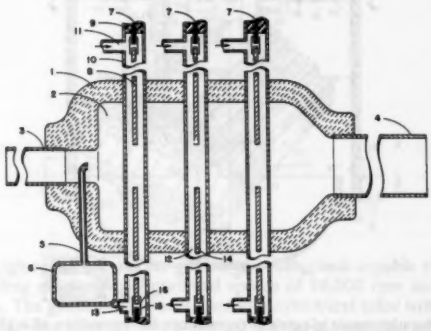
ERRATUM

For Class 307—130 see:
Patent No. 3,737,761

3,737,688
CHANGING CAPACITY ELECTRIC GENERATOR

Louis Richard O'Hare, 2700 Indiana, N.E., Albuquerque, N. Mex.

Filed June 14, 1971, Ser. No. 153,465
Int. Cl. H02n
U.S. Cl. 310—2 3 Claims

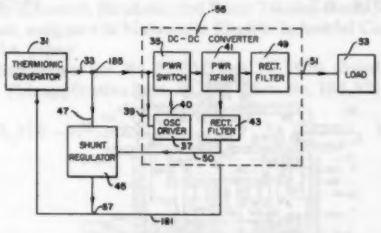


In the changing capacity electric generator, the electrostatic capacitance existing between oppositely charged condenser elements in a ceramic resonant combustion chamber is periodically increased when combustion takes place producing ionized gases and periodically decreased when evacuating gas currents remove the ionized gases. The changing capacitance so produced causes a current flow when this changing capacitance is placed in series electric circuitry with a high voltage transformer and a charged fixed condenser enabling electric work to be done from the secondary of the transformer.

3,737,689
POWER CONDITIONER

Donald L. Schuerholz, 5117 Herring Run Drive, Baltimore, Md.

Filed Aug. 20, 1965, Ser. No. 481,431
Int. Cl. G21d 7/00
U.S. Cl. 310—3 R 7 Claims

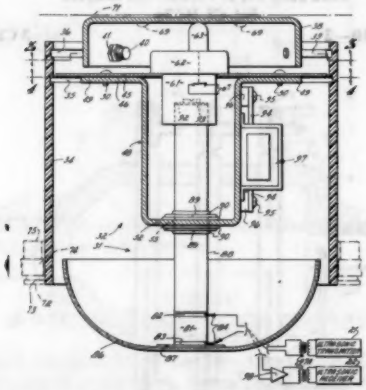


A power conditioner and radioisotope heated thermionic generator, having a self-starting dc-dc converter, and a dependable, electronic shunt regulator for shunting excess power at the beginning of the generator lifetime and zero power at the end of the generator lifetime, and for maintaining a steady, dependable output for a load even if the load current changes from a predetermined level.

3,737,690
ULTRASONIC TRANSDUCER FOR INTRUDER ALARM SYSTEM

John Antonio, Fairfield, Conn., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Feb. 28, 1972, Ser. No. 229,995
Int. Cl. H04r 17/00
U.S. Cl. 310—8.2 15 Claims

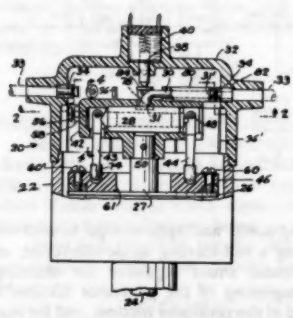


An ultrasonic/electrical transducer for operation at a given frequency in an ultrasonic intruder alarm system is provided with a shallow self-supporting dish-shaped radiator mounted at the center of its concave surface to one face of a piezoelectric ceramic crystal. The opposite face of the crystal is secured to one end of a tuning stub which extends one-half wavelength from the center of the radiator and is connected at its midpoint to a base through an accoustic isolator. The stub is tuned by addition of trimming washes to its free end. The crystal is of the expansion/compression type having its piezoelectric axis parallel to that of the tuning stub and perpendicular to the surface of the radiator. The base is made of two parts joined by means which are the structurally weakest point of the assembly so that, if the transducer is tampered with, this point will move tripping a tamper switch to signal the alarm.

3,737,691
PIEZOELECTRIC DISTRIBUTOR

Lawrence E. Hoover, Detroit, Mich., assignor to Anthony Tramastozzi, Detriot and Constantine Papas, Southfield, Mich., part interest to each

Division of Ser. No. 839,445, July 7, 1969, Pat. No. 3,622,717.
This application Nov. 1, 1971, Ser. No. 194,590
Int. Cl. H04r 17/00
U.S. Cl. 310—8.7 10 Claims

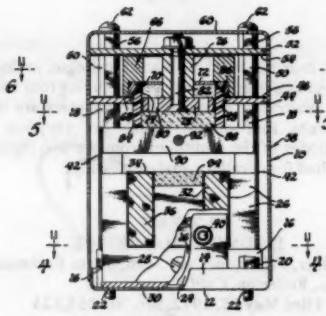


A piezoelectric generator and distributor unit for a spark ignition internal combustion engine in which a piezoelectric element is mounted in a body carried by a rotor shaft for rotation therewith. Two lever arms are pivoted on the body and engage opposed ends of the element. A plate with a cam track is fixed with respect to the rotor and engages the lower ends of the levers so that rotation of the rotor and body causes the levers alternately to compress and release the element which develops a charge at a high potential in response to being stressed by the levers. A central rotor terminal and terminals in a distributor cap provide a conductive path for transmitting charges from the unit. These terminals are surrounded by heat and electrically insulating tubes which extend beyond the ends of the terminals to provide a shield which eliminates the corona and premature arcing problems of high voltage switching in this type of distributor.

3,737,692
HORIZONTALLY OMNIDIRECTIONAL ELECTROMAGNETIC SENSOR

Ralph A. Rahn, Cudahy, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1972, Ser. No. 216,073
Int. Cl. H02k 35/00
U.S. Cl. 310—15 9 Claims

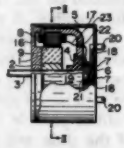


An omnidirectional sensor which converts planar movement of a seismic mass into an electrical impulse by electromagnetic induction. The seismic mass is a hollow cylinder having the lower edge thereof slidable on a horizontal planar apertured surface of a support. A stop member extends through the mass and aperture and limits movement of the mass along the surface under an acceleration pulse of predetermined amplitude and time.

3,737,693
OUTER-ROTOR TYPE D.C. MOTORS

Matsuo Mishima, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 213,077
Claims priority, application Japan, Dec. 30, 1970, 45/122347; Dec. 30, 1970, 45/122348; Dec. 30, 1970, 45/122349
Int. Cl. H02k 7/00
U.S. Cl. 310—67 8 Claims



An outer-rotor type D.C. motor wherein the rotor comprises a cylindrical yoke, a plurality of magnetic poles which

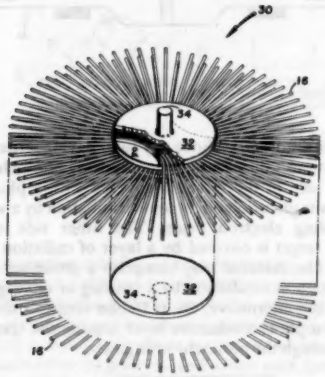
are each magnetically coupled at one end with the inner wall of the yoke and provided at the other end with a pole piece and a bridge magnetically coupling said pole piece with the adjacent one; and armature coils wound about bobbins detachably fitted to said magnetic poles.

3,737,694

FANNED CIRCULAR FILAMENT ROTOR

David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed June 21, 1972, Ser. No. 264,930
Int. Cl. H02k *7/00*; F16h *33/02*
U.S. Cl. 310—74 **18 Claims**



The invention is in inertial energy storage device wherein a central hub holds a multiplicity of anisotropic filaments, the filaments extending from the hub in fixed relation thereto and in parallel planes perpendicular to an axis of rotation taken through the hub. The majority of the filaments in each of the parallel planes are disposed in fixed, arcuately fanned positions, the radius of curvature of the filaments being dependent on the location of said filaments within the hub. A particular feature of the present invention is that each parallel plane of filaments is disposed at angles to adjacent planes of filaments to reduce aerodynamic drag and increase the dynamic stability of the structure.

3,737,695

SHADED POLE SYNCHRONOUS MOTOR

Bill G. Kilmer, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sept. 23, 1971, Ser. No. 183,211
Int. Cl. H02k *19/14*
U.S. Cl. 310—162 **5 Claims**

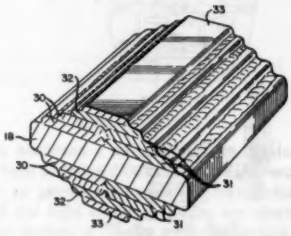
Shading means are disposed against each end plate of a stator field structure, the shading means covering substantially the field plate's entire surface and providing a magnetic path completely around a predetermined number of poles of each end plate, the predetermined number of poles being less than the number of poles in each plate.

3,737,696

HIGH SPEED HOMOPOLAR INDUCTOR GENERATOR WITH STRAIGHT WINDING CONSTRUCTION

Eike Richter, Erie, and George E. Brissey, Harbrocreek, both of Pa., assignors to General Electric Company, Wilmington, Del.

Filed Sept. 16, 1971, Ser. No. 181,001
Int. Cl. H02k *19/20*
U.S. Cl. 310—168 **6 Claims**



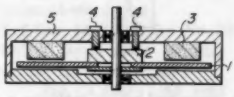
A high speed homopolar generator is described capable of operating efficiently at rotational speeds of 90,000 rpm and above. The generator includes a smooth cylindrical rotor with axially in-line magnetic north and south poles at opposite ends of the rotor. The AC windings in the individual stator stacks are offset by 180 electrical degrees as they pass between stacks to insure that the induced voltage in the active portions of each winding are of the proper polarity. The cylindrical rotor construction minimizes windage losses and includes a straight bar of magnetic material with the circumferential interpolar space filled with a non-magnetic material. The non-magnetic material is bonded to the magnetic bar so that the resulting magnetic-non-magnetic composite rotor is strong enough to withstand the mechanical stresses to which it is subjected at speeds in excess of 90,000 rpm. Layers of the non-magnetic material are deposited on the bar of magnetic material by a plasma-arc hot wire welding process and the assembly is then machined into the desired cylindrical shape to minimize windage. In this fashion, the geometry of the rotor is optimized, the maximum amount of axial magnetic section is obtained with the simplest rotor geometry, the requisite physical strength is obtained, while at the same time, reducing or minimizing windage at the very high velocities obtained in the machine.

3,737,697

COMMUTATOR MOTOR

Teruaki Kitamori, Hirakata, and Naozi Takeda, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 12,021, Feb. 17, 1970, abandoned.
This application Sept. 30, 1971, Ser. No. 185,371
Int. Cl. H02k *3/76*
U.S. Cl. 310—207 **1 Claim**



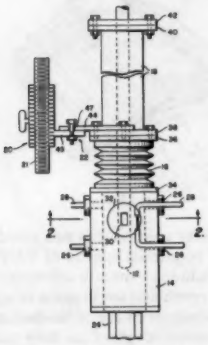
An axial gap type commutator motor including a disk-like armature winding formed by laminating a plurality of armature elements each having spiral coils consisting of a flat strip conductor formed by means of a printed-circuit technique or

punching which are provided on the fore and rear surfaces of a doughnut-like thin insulating film, with insulating sheets being interposed therebetween, said armature being connected with a plate-like commutator.

3,737,698
X-RAY TARGET CHANGER USING A TRANSLATING ANODE

Forrest L. Carter, 6404-81st St., Bethesda, Md.

Filed Nov. 24, 1971, Ser. No. 201,698
Int. Cl. H01j *35/24*
U.S. Cl. 313—60 **5 Claims**

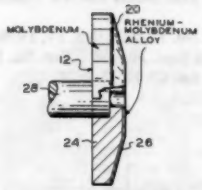


Means for moving in two orthogonal directions the target anode of an X-ray tube within the tube body comprising bellows inserted between the tube body section and a glass-insulator section, the anode being fixed to the sealing flange of the insulator section. Longitudinal translation means are attached to the flange by which the insulator section is mounted to the bellows. Operation of the translation means moves the anode and insulator section relative to the tube since the bellows can contract or expand.

3,737,699
X-RAY TUBE HAVING ANODE TARGET LAYER OF MOLYBDENUM RHENIUM ALLOY

Robert N. Gager, Elmhurst, Ill., assignor to Picker Corporation, Cleveland, Ohio

Filed May 18, 1972, Ser. No. 254,502
Int. Cl. H01j *35/10*
U.S. Cl. 313—60 **10 Claims**

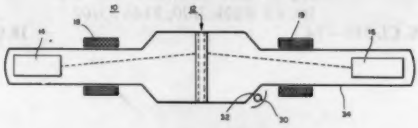


An x-ray tube is described which includes a rotary anode having a target layer of molybdenum rhenium alloy provided on a base member of molybdenum. As a result of the improved target layer, the x-ray tube has a greatly increased useful life due to a lower reduction in x-ray radiation after multiple exposures at high thermal loading of the target.

3,737,700
CATHODE RAY STORAGE TUBE HAVING TARGET WITH PHOTOCHROMIC MEMORY DEVICE

David Ronald Steinberg, 814 Pebblebrook Drive, Raleigh, N.C.

Filed July 30, 1971, Ser. No. 167,606
Int. Cl. H01j *29/18, 31/62*
U.S. Cl. 313—65 R **14 Claims**

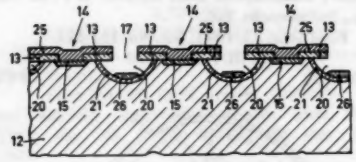


A non-viewing storage cathode ray tube having write, read and erase functions utilizes a target comprising photochromic material. One side of the target is covered with a phosphor layer which emits ultraviolet light upon irradiation by a writing and/or a reading electron beam. The other side of the photochromic target is covered by a layer of radiation sensitive material. The material may comprise a phosphor which emits red light upon irradiation by a reading or erasing electron beam. In the alternative, the radiation sensitive material may comprise a photoconductive layer sensing the transmission of light through the photochromic glass.

3,737,701
CAMERA TUBE HAVING A SEMICONDUCTOR TARGET WITH PN MOSAIC REGIONS COVERED BY A CONTINUOUS PERFORATED CONDUCTIVE LAYER

Arthur Marie Eugene Hoeberechts, and Else Kool, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 6, 1971, Ser. No. 140,734
Claims priority, application Netherlands, May 16, 1970, 7007171
Int. Cl. H01j *31/38, 31/58*
U.S. Cl. 313—66 **12 Claims**

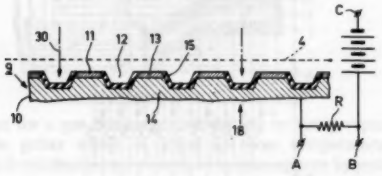


A camera tube employing a radiation-sensitive target positioned to be scanned by an electron beam. The target comprises a wafer of semiconductive material having a substrate of semi-conductor material of one conductivity type, e.g. n-type silicon. A plurality of islands separated by grooves project from the substrate on the side scanned by the electron beam. These islands are of opposite conductivity type and form with the substrate rectifying junctions. On the exposed surface of each island is a metal layer which is separated from the semiconductive material of the island by an insulating layer having an aperture therein.

3,737,702
CAMERA TUBE TARGET WITH PROJECTING P-TYPE REGIONS SEPARATED BY GROOVES COVERED WITH SILICON OXIDE LAYER APPROXIMATELY ONE-SEVENTH GROOVE DEPTH

Else Kooi, and Arthur Marie Eugene Hoeberechts, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,516
Claims priority, application Netherlands, May 6, 1969, 6906939
Int. Cl. H01j *29/45, 31/38, 31/28*
U.S. Cl. 313—66 **9 Claims**



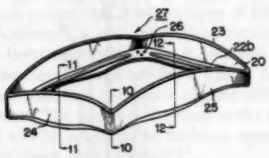
The invention relates to a tube for picking up images and in particular to a radiation-sensitive target plate present therein of a semiconductor material and to the manufacture of such a target plate. The semiconductor plate comprises a substrate on which a mosaic of regions is present, which are separated from each other by grooves, and which each form a rectifying junction with the substrate.

An insulating material in the form of a thin insulating layer is present in the grooves and covers the surface of the substrate in the grooves and the edges of the rectifying junction. Such a layer is preferably obtained by oxidation, for example, by means of a silicon nitride layer as a masking layer.

3,737,703
SHADOW MASK FRAME CONSTRUCTION

Asahide Tsuneta, Kawasaki, and Shinichi Sawagata, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 27, 1971, Ser. No. 166,556
Claims priority, application Japan, July 31, 1970, 45/75817; July 31, 1970, 45/75818
Int. Cl. H01j *29/06, 29/08, 29/02*
U.S. Cl. 313—85 S **8 Claims**

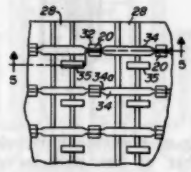


In a shadow mark for use in a colour television receiving tube of the type comprising a rectangular mask plate, and a rectangular frame member including a rectangular side wall adapted to support the mask plate and a reinforcing flange, the angle between the side wall and the reinforcing flange is made larger than 90° at the corners of the rectangular frame member and to gradually increase toward the longitudinal centres of the shorter sides and the longer sides of the rectangular frame member.

3,737,704
SCANNABLE LIGHT EMITTING DIODE ARRAY AND METHOD

Lawrence A. Grenon, Phoenix, and Michael G. Coleman, Tempe, both of Ariz., assignors to Motorola Inc., Franklin Park, Ill.

Filed Oct. 27, 1971, Ser. No. 194,609
Int. Cl. H01l *15/00*
U.S. Cl. 313—108 D **6 Claims**



There is disclosed a monolithic light display comprising a matrix of light emitting diodes in an integral structure which is scannable to produce an alpha numeric character display. Groups of the light emitting diodes are electrically isolated from other groups of diodes by a supporting carrier and an isolation channel with the cathode of the diodes connected in a series of groups by address or row lines and anodes connected in an orthagonal plurality of groups by bit or column lines. A conductive bus in the isolation channel forms the connection for either the row or column lines. A strobing format logic address system is provided for lighting the individual diodes to emission for producing an alpha numeric character.

There is also disclosed a method of manufacturing the foregoing which comprises placing an epitaxial layer of a first conductivity type semiconductor material upon a substrate of semiconductor material having an intrinsic or semi insulating conductivity. Then channels are etched through the epitaxial layer to the semi insulating semiconductor substrate, thereby forming the epitaxial material into a plurality of parallel ribs or ridges. After coating the entire surface of the channels and the ridges with a dielectric layer, a conductive material is deposited over the substrate to fill the channels with the conductive material which may be either a metal or polycrystalline silicon doped to have sufficient conductivity. The surface of the substrate is then lapped to remove the conductive material and the dielectric material from the ridges to expose the first semiconductor material, and following diffusion of a dopant to convert the first semiconductor material to a second conductivity type material thereby forming a PN junction in each of the ridges in spaced locations therealong, suitable metallization is placed on the substrate to connect the first conductivity material to the conductive material in the channels to form column lines and metallization is placed on top a dielectric layer to connect the other conductivity material in a plurality of row lines.

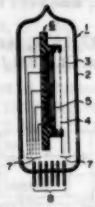
3,737,705
LUMINESCENT ALPHANUMERIC INDICATING TUBE HAVING PLURAL FLUORESCENT LAYERS

Mitsuo Takeda, Meguro-ku, Tokyo; Hiroshi Miyano, Kawasaki-shi, and Hideyuki Nagaoka, Shinagawa-ku, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 14, 1971, Ser. No. 207,733
Claims priority, application Japan, Dec. 17, 1970, 45/112476; Dec. 30, 1970, 45/133895
Int. Cl. H01j *1/66, 1/68*
U.S. Cl. 313—108 R **3 Claims**

A luminescent alphanumeric indicating tube comprising an array of fluorescent segments formed on one surface of an insulating substrate, each segment including a carbon layer coated on the surface of the substrate and a first fluorescent layer interposed between the carbon layer and a second

fluorescent layer, the first layer consisting fluorescent particles whose diameter is nearly equal to or smaller than that of the particles constituting the carbon layer and the second



layer consisting of fluorescent particles whose diameter is larger than that of the particles consistuting the first fluorescent layer.

3,737,706

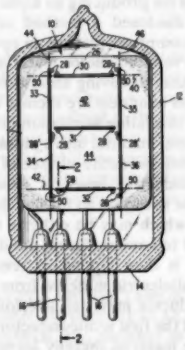
NUMERICAL DISPLAY DEVICE HAVING FILAMENTARY LIGHT SOURCES

Norman Lee Lindburg, Berkeley Heights; Richard Arthur Bonnette, New Providence, and Thomas Edward Deegan, Winding Way, Belle Mead, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,185

Int. Cl. H01j *61/66*; H01k *7/04*

U.S. Cl. 313—109.5 **6 Claims**



A display device is provided of the type comprising a plurality of electrical resistance filamentary light sources so arrayed that when various combinations of the sources are selectively energized, various luminous symbols are produced. The filaments lie in a common plane and do not cross one another, and are disposed to form a substantially closed figure having corners. End portions of several of the filaments extend beyond the corners of the figure, and remain non-luminous when central portions of these filaments are luminous.

3,737,707

INDICATOR TUBE UTILIZING A BARRIER ELECTRODE AROUND EACH OF THE INDICATOR UNITS TO WHICH ONE OF TWO VOLTAGES MAY BE APPLIED

Yuzuru Yanagisawa, Fuzisawa-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

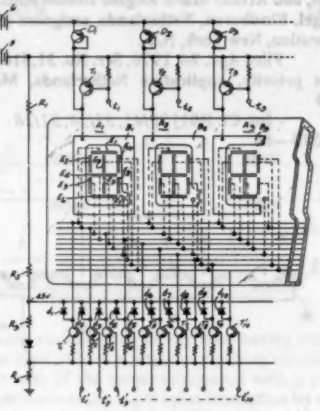
Filed Sept. 15, 1971, Ser. No. 180,727

Claims priority, application Japan, Sept. 18, 1970, 45/81750

Int. Cl. H01j *61/66*; H01k *7/04*

U.S. Cl. 313—109.5 **7 Claims**

A flat type multi-figure numeric or alpha numeric display device employing a cold cathode gas discharge with a barrier anode associated with each figure. Each figure of the device is composed of segmented electrodes located in a co-planar arrangement. Segments are selectively energized by the driver



logic to display required figures, in combination with an electrode in the same plane which selectively may function as either an anode or as an ion barrier.

3,737,708

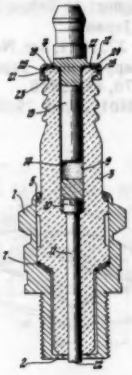
SERIES GAP SPARK PLUG

Thomas L. Vaillancour, Fenton, and Wayne W. Sanders, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 28, 1972, Ser. No. 267,090

Int. Cl. H01t *13/02*

U.S. Cl. 313—120 **4 Claims**



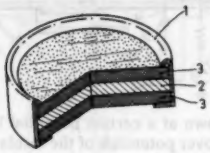
A series gap spark plug having an auxiliary spark gap within the insulator centerbore between the end of the terminal screw and the end of the center electrode, the plug being formed to permit pressure relief from and temperature control of the auxiliary spark gap by providing a loose fit of the terminal screw within the centerbore, the terminal screw having a cap-like member secured over the top rib on the outer surface of the insulator, the space between the insulator centerbore wall and the terminal screw being vented to atmosphere.

3,737,709

GAS DISCHARGE TUBE COMPRISING MERCURY VAPOR AND PROVIDED WITH A GETTER

Johannes Hornman; Johannes Van Esdonk, and Jan Visser, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,989
Claims priority, application Netherlands, Nov. 14, 1970, 7016726
Int. Cl. H01j 19/70
U.S. Cl. 313—174 3 Claims



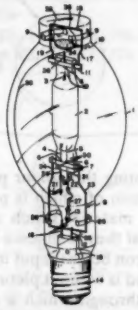
A getter for a gas discharge tube having mercury vapor in which the getter which is active at room temperature is separated from the mercury-containing atmosphere by porous sintered bodies.

3,737,710

HIGH PRESSURE ELECTRIC DISCHARGE DEVICE WITH GETTER OF BARIUM PERIOXIDE AND COPPER

John F. Waymouth; William M. Keeffe, and W. Calvin Gungle, all of Danvers, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 13, 1972, Ser. No. 271,401
Int. Cl. H01j 61/24
U.S. Cl. 313—174 13 Claims



Barium peroxide and copper are disposed within a high pressure electric discharge device to getter hydrogen entrapped therein and reduce the concentration of liberated oxygen. In one embodiment, powdered barium peroxide is held in a nickel cup; a layer of copper filings is disposed above and separated from the barium peroxide by a pad of fibrous aluminum silicate material; and the cup is capped with a disc of porous stainless steel. The getter is disposed in the device at a location where it will be subjected to ambient operating temperatures between about 150° and 360° C.

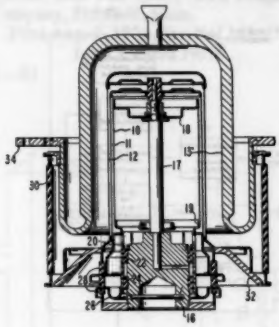
3,737,711

ELECTRON TUBE HAVING AN IMPROVED FILAMENTARY CATHODE AND SUPPORT THEREFOR AND METHOD OF MAKING SAME

James P. Polese, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 21, 1968, Ser. No. 777,747
Int. Cl. H01j 1/18, 1/90, 9/18
U.S. Cl. 313—277 16 Claims

An electron tube is disclosed comprising an evacuated envelope enclosing at least three cylindrical electrodes including a directly heated cathode, a grid and an anode. Cathode support means are disclosed comprising a generally cylindrical, metallic stem, a hollow, metallic support cylinder electrically



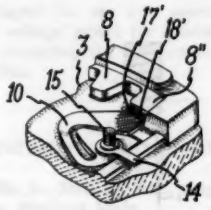
connected to the cathode and coaxially situated about at least a portion of the stem in spaced relation therewith, and two dielectric annuli interposed between the stem and cylinder in abutment therewith.

3,737,712

SPARKGAP ASSEMBLY HAVING A SEMI-CONDUCTIVE COATING ADJACENT THE ELECTRODES THEREOF

Theodore W. Hall, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 17, 1971, Ser. No. 199,709
Int. Cl. H01j 7/44; H02h 7/24
U.S. Cl. 313—325 6 Claims



A surge voltage arrester sparkgap assembly having a plurality of horngap electrodes is provided with a coating of high resistance, electrically conductive material mounted adjacent the outermost ends of the electrodes. The coating of conductive material is effective to form high resistance electrical circuits between the respective ends of the electrodes and any electrically conductive metal particles that may be eroded from the electrodes and splattered onto the internal insulating surfaces of the sparkgap assembly. These high resistance electrically conductive circuits prevent the formation of a corona discharge between the electrodes and any such conductive particles.

3,737,713

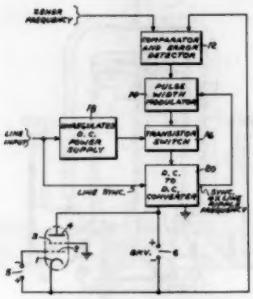
HIGH VOLTAGE SUPPLY FOR DEPRESSED COLLECTOR TRAVELING WAVE

Joseph Kalish, New Milford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 17, 1972, Ser. No. 218,165
Int. Cl. H01g 25/34
U.S. Cl. 315—3.5 2 Claims

This invention relates to a regulated power supply for a depressed collector traveling wave tube (TWT). Instead of requiring a high voltage regulated power supply across the cathode and helix of the TWT, a variable switching power

supply generates the depressed collector voltage and is placed in series with the TWT collector to cathode power supply. The



variable supply compensates for variations in the output of the collector to cathode supply to provide the regulated high voltage across the helix and cathode of the TWT.

3,737,714

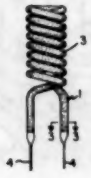
DARK COATED HEATER FOR VACUUM TUBE CATHODE

James Theodosopoulos, Ipswich, Mass., and Stanley MacKay, Exeter, N.H., assignors to Sylvania Electric Products Inc., Danners, Mass.

Division of Ser. No. 419,440, Dec. 18, 1964, Pat. No. 3,450,565. This application Jan. 8, 1969, Ser. No. 810,058

Int. Cl. H01j *1/20, 19/14*

U.S. Cl. 313—337 **3 Claims**



A tungsten heater has a first coating of an insulating oxide covering its entire body and extending onto its legs and a second coating of elemental tungsten, reduced in situ, covering substantially all the first coating except for a short span on the legs.

3,737,715

BISTABLE STORAGE DEVICE AND METHOD OF OPERATION UTILIZING A STORAGE TARGET EXHIBITING ELECTRICAL BREAKDOWN

Robert Steven Silver, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

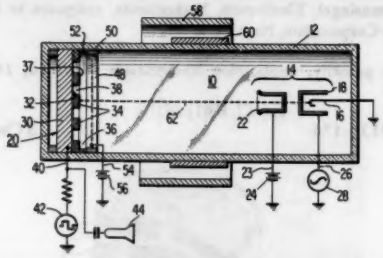
Filed Feb. 2, 1970, Ser. No. 7,833

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **6 Claims**

An information-handling device including: a storage target; electron gun means for producing on the storage target an electrostatic charge pattern embodying the desired information; suitable connection means for applying to and extracting from the storage target electrical signals; and a collector electrode.

The storage target comprises a signal plate and a storage layer disposed thereon, the storage layer comprising an electrically insulating material and being adapted to exhibit elec-



trical breakdown at a certain potential between the first and second cross-over potentials of the insulating material.

A novel method of operating the device is also disclosed.

3,737,716

COLOR PURITY ADJUSTMENT UTILIZING A COIL ATTACHED TO THE FACEPLATE

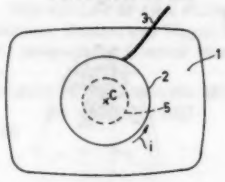
Jan Gerritsen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1971, Ser. No. 127,614

Claims priority, application Netherlands, Apr. 10, 1970, 7005144

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **13 Claims**



A method of adjusting the colour purity in colour picture display tubes the screen of which is provided with phosphor dots of luminescent material which are impinged upon by electron beams so that they luminesce in different colours. At least one of the electron beams is put into operation, while the picture to be displayed is without picture content and a coil or an annular magnet through which a direct current flows is placed in front of the screen of the tube. The purity adjusting members, that is to say, the purity magnets and/or purity coils and the securing means of the deflection unit are adjusted in such a manner that a ball of the colour corresponding to the said electron beams is placed in a fixed position within the coil. The coil may alternatively serve for degaussing metal parts of the picture tube.

3,737,717

HIGH INTENSITY LAMP CONTAINING THERMAL SHORTING FUSE

Michael G. Arendash, Wickliffe, Ohio, assignor to General Electric Company, Schenectady, N.Y.

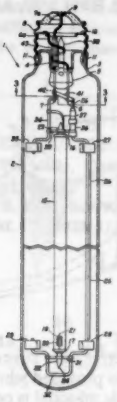
Filed Mar. 13, 1972, Ser. No. 234,036

Int. Cl. H01j *17/36*

U.S. Cl. 315—75 **6 Claims**

A high intensity lamp comprising an arc tube containing metal vapor such as sodium and mercury mounted within an evacuated outer jacket. A self-shorting arcing fuse is provided to forestall a destructive power arc should there occur a leak of air into the jacket or should the arc tube fail resulting in a low pressure of gas in the jacket. The fuse comprises a ther-

mally deformable bimetal strip located to define the closest spatial approach between opposite current conductors within



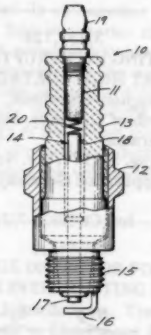
the jacket. A spot of brazing metal on the bimetal assists in welding the parts together at closure.

3,737,718

IGNITION NOISE SUPPRESSION CENTER ELECTRODE ASSEMBLY FOR SPARK PLUGS

Paul E. Rempes, Jr., Royal Oak, Mich., and Le Roy H. Houghton, Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Aug. 20, 1971, Ser. No. 173,409
Int. Cl. H01t *13/20*
U.S. Cl. 315—58 **10 Claims**



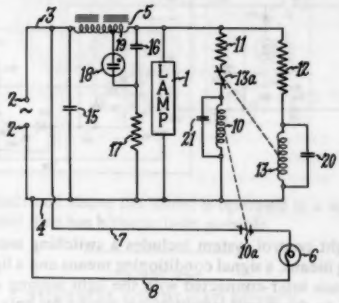
An improved resistance element for suppressing random radio frequency radiation from the high voltage ignition circuit of an internal combustion engine. The resistance element is produced by sintering an extruded or compressed rod consisting essentially of copper oxides plus a heat destructible binder and from 0 to 10 percent of an inert plasticizer. The resulting element consists essentially of a combination of cupric oxide (CuO) and cuprous oxide (Cu_2). Optional contact terminals may be formed on the element by applying a metallic coating to opposed ends of the capsule. The suppression element may be placed in the center electrode assembly of a spark plug electrically in series between a high voltage terminal and an electrode tip or at any suitable location in the high voltage ignition circuit for the internal combustion engine.

3,737,719

LIGHTING SYSTEM WITH AUXILIARY LAMP CONTROL CIRCUIT AND PROTECTIVE MEANS THEREFOR

Clair A. Nodurft, East Flat Rock, N.C., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 2, 1971, Ser. No. 167,977
Int. Cl. H05b *39/10*
U.S. Cl. 315—91 **3 Claims**



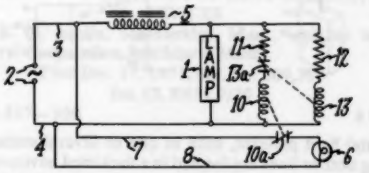
Electrical ballast circuit for operating a gaseous discharge lamp is combined with an incandescent lamp circuit having relay control means for automatically turning the incandescent lamp on when the discharge lamp goes off. The arrangement provides for the auxiliary incandescent lamp to remain on until the discharge lamp is re-started and reaches substantially normal illumination level, after which the incandescent lamp is automatically turned off. The control circuit is particularly adapted for use with gaseous discharge lamps requiring high voltage pulses for ignition and incorporates capacitors for protecting the relay control means from such high voltage pulses.

3,737,720

LIGHTING SYSTEM WITH AUXILIARY LAMP CONTROL CIRCUIT

Candler A. Willis, Jr., Zirconia, N.C., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 2, 1971, Ser. No. 167,978
Int. Cl. H05b *39/10*
U.S. Cl. 315—91 **4 Claims**



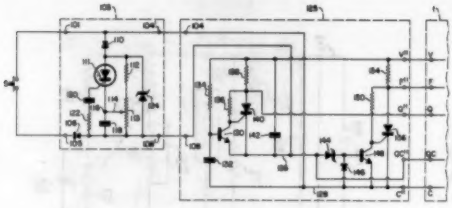
Electrical ballast circuit for operating gaseous discharge lamp is combined with an incandescent lamp circuit having relay control means for automatically turning the incandescent lamp on when the discharge lamp goes off. The arrangement provides for the auxiliary incandescent lamp to remain on until the discharge lamp is re-started and reaches substantially normal illumination level, after which the incandescent lamp is automatically turned off.

3,737,721

COMPUTER FLASH WITH REMOTE SENSOR AND TWO-WIRE CONTROL OF FLASH FIRING AND QUENCH

Francis T. Ogawa, Fort Washington, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 22, 1971, Ser. No. 108,878
Int. Cl. H05b 37/02, 39/04
U.S. Cl. 315—151 38 Claims



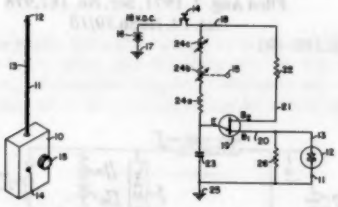
A light control system includes a switching means, a light sensing means, a signal conditioning means and a light producing means inter-connected with the light sensing means connected to the signal conditioning means by only two wires. The switching means is selectively operable for generating a flash signal to effect the apparent production of a source light from the light producing means for the illumination of a scene. Gating means activates the normally insensitive light sensing means to respond to light from the scene when a flash signal is generated. A signal to effect the apparent termination of the source light is generated by the light sensing means when sufficient light is received from the scene. Dynamic anticipation means provide a time varying compensation corresponding to the light intensity-time variation characteristic of flash-type light producing means.

3,737,722

METHOD AND APPARATUS FOR FORMING SPATIAL LIGHT PATTERNS

Meyer J. Scharlack, 1968 Yosemite, Berkeley, Calif.

Filed May 7, 1971, Ser. No. 141,675
Int. Cl. H05b 37/02
U.S. Cl. 315—209 5 Claims



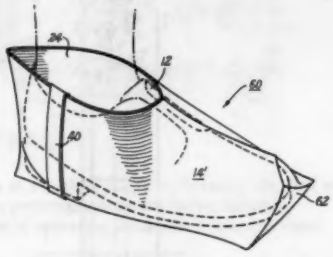
Spatial light patterns, such as one or several stationary or moving dots or lines are formed in a darkened environment by repeatedly moving a pulsing light emitter which is intensely bright, yet yields little or no illumination to surrounding objects; such as a light-emitting diode or neon light, through a fixed or random path. The light emitter is periodically connected to a source of electric potential by an electronic oscillator, which energizes the light emitter and lights it during parts of the periods between successive energizations. Preferably the frequency of the light pulses and the duration of these pulses can be varied, either manually or in response to an externally controlled electrical signal generated by sound, heat, mechanical motion, pressure, light or other means.

3,737,723

DISPOSABLE SHOE COVERING

Steven Kanor, White Plains, N.Y., assignor to Lorton Laboratories, Ltd., New York, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,561
Int. Cl. H05f 3/00; A43b 1/10
U.S. Cl. 317—2 B 8 Claims



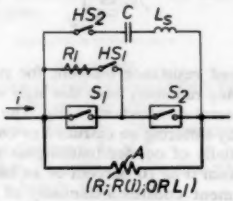
A disposable protective shoe covering for entirely enclosing the shoe of a wearer is provided wherein a single flat sheet of flexible heat shrinkable material is centerfolded to form a pair of complementary halves having a straight bottom edge adjacent the centerfold and a top edge, defined by the adjacent edges of the sheet halves opposite the fold, which is opened to provide access into the shoe covering. The side edges of the sheet halves, between the top and bottom edges, respectively define the front and back edges of the shoe covering and are heat sealed together (i) at the back edge along an inclined line extending outwardly and rearwardly with respect to the bottom edge, (ii) at the front edge along a first inclined line extending upwardly and rearwardly with respect to the bottom edge and along a second inclined line, defining the instep of the shoe covering, extending from the first line upwardly and rearwardly to the top edge at a greater inclination than the first line, and (iii) adjacent the bottom edge, at the front and rear portions thereof, along lines extending upwardly and outwardly from the bottom edge to their points of interconnection with the first line and the back edge respectively.

3,737,724

CURRENT LIMITING INTERRUPTION OF CURRENTS AT HIGH VOLTAGES

Jurgen Salge, Salzgitter-Osterlinde, and Hagen Hartel, Braunschweig, both of Germany, assignors to Dieter Kind, Braunschweig, Germany

Filed Aug. 5, 1971, Ser. No. 169,362
Claims priority, application Germany, Aug. 6, 1970, P 20 39 065.2
Int. Cl. H02h 7/22
U.S. Cl. 317—11 A 12 Claims



An improved circuit for the current limiting interruption of alternating or direct currents in a power main at high voltages of the type wherein an energy absorbing circuit and a capacitor are each connected in parallel with a circuit path including a commutation or interrupter switch so that upon opening of the switch the current flowing therein will be commutated into

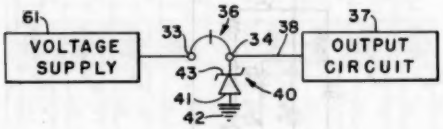
the parallelly connected circuits wherein the current will be reduced to a residual value which is switched off by a subsequently connected circuit breaker. A further commutating switch is connected in series with the first mentioned commutation switch and an ohmic resistance connected in parallel therewith so that the total series resistance of the ohmic resistance and the arc resistance of the first mentioned commutation switch will be sufficient to cause the commutation of the main current into the energy absorbing and capacitor circuits.

3,737,725

CIRCUIT OVERVOLTAGE PROTECTOR

Thomas S. Donnelly, Wickliffe, Ohio, assignor to Aviation Corporation, Cleveland, Ohio

Filed Nov. 8, 1971, Ser. No. 196,270
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **11 Claims**



The combination of a voltage sensitive device, for example, a zener diode, in circuit with a current sensitive device, for example, a circuit breaker or a fuse, arranged so that an overvoltage condition causes the voltage sensitive device to actuate the current sensitive device. In one embodiment, the zener diode is connected to a source of reference potential and the output terminal of a circuit breaker. When the voltage at the output terminal of the circuit breaker exceeds the breakdown voltage of the zener diode, the impedance effectively approaches zero and the current flow through the diode to ground causes the circuit breaker to interrupt the circuit between a voltage source and an output circuit. In a modification of this embodiment, a warning lamp is provided across the circuit breaker so that when the breaker has been actuated, the lamp is illuminated. In still another embodiment, a conventional cylindrical fuse in a series circuit with a voltage source and an output circuit is provided with a zener diode having its cathode connected to the output terminal of the fuse and its anode connected to the ground provided, for example, by a conductive member about the envelope of the fuse. When the voltage at the output terminal of the fuse exceeds a minimal level, the diode conducts to cause the fuse to open the circuit between the voltage source and the output circuit.

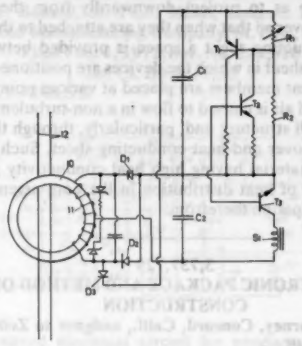
3,737,726

EARTH LEAKAGE DETECTOR FOR OPERATING CIRCUIT INTERRUPTING MEANS

Edward Tarchalski, Johannesburg, Transvaal, Republic of South Africa, assignor to Heinemann Electric South Africa Limited, Johannesburg, Republic of South Africa

Filed Mar. 28, 1972, Ser. No. 238,801
Int. Cl. H02h *1/02*
U.S. Cl. 317—18 D **6 Claims**

A device for detecting the occurrence of an earth leak fault in a circuit the live and neutral conductors of which constitute first and second primary windings of a core-balance transformer or toroid. On the occurrence of an earth leak fault, a voltage is induced into a secondary winding on the toroid. The secondary voltage is rectified and the rectified voltage charges first and second capacitors. The second capacitor is charges to a lower voltage than the first capacitor. When the first capacitor is fully charged a first switching device is energised. This, in turn, causes a second switching device to be energised allowing the second capacitor to discharge into and operate a circuit breaker or the like. By using two capacitors in the



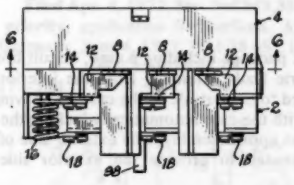
manner described above the toroid is operated in a more efficient manner than has hitherto been possible.

3,737,727

THERMAL OVERLOAD DEVICE

Louis Mouis, Aurora, Ill., assignor to Furnas Electric Company, Batavia, Ill.

Filed July 17, 1972, Ser. No. 272,132
Int. Cl. H02h *5/04*
U.S. Cl. 317—40 A **7 Claims**



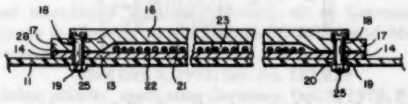
A polyphase circuit device using solder pot structures each controlling an independently operating actuating lever acting on an associating lever arm carried on rotatable shaft. A lever rotatable with the shaft operates a contact actuator to open a control circuit when a thermal overload occurs in any one conductor of the circuit being protected. A reset actuator is provided to permit reset when the overload has been removed.

3,737,728

MOUNTING STRUCTURE FOR HEAT-GENERATING DEVICES

James E. D. Austin, Southbridge, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Dec. 17, 1971, Ser. No. 209,316
Int. Cl. H05k *7/20*
U.S. Cl. 317—100 **5 Claims**



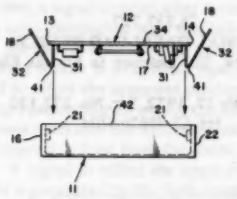
A structure for mounting a large number of closely spaced heat-generating devices of a relatively fragile nature, such as magnetic core memories for use in computer apparatus. The devices are affixed to a flexible heat conducting sheet having a

pair of tabs projecting from opposite edges thereof. A relatively rigid metallic cover having corresponding tabs is attached to the heat conducting sheet at the tabs. The tabs on the cover are formed so as to project downwardly from the general plane of the cover so that when they are attached to the tabs of the heat conducting sheet a space is provided between the cover and the sheet in which the devices are positioned. A plurality of resilient members are placed at various points within such space and air is caused to flow in a non-turbulent fashion past the overall structure and, particularly, through the space between the cover and heat conducting sheet. Such a structure using a material having high heat conductivity provides for uniformity of heat distribution in the core assembly and good heat dissipation therefrom.

3,737,729
ELECTRONIC PACKAGE AND METHOD OF CONSTRUCTION

Durland B. Carney, Concord, Calif., assignor to Zeltex, Inc., Concord, Calif.

Filed June 14, 1971, Ser. No. 152,874
Int. Cl. H05k *5/00*
U.S. Cl. 317—101 PH **5 Claims**

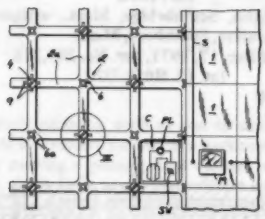


An electronic package including a case, circuit board, and elongated electric leads extending from the interior side of said circuit board to the outside of the case and having a snap action interfit with the case automatically locking the parts in attached position upon assembly. The exterior side of the circuit board is coated to provide the exterior side of the package.

3,737,730
LATTICE ASSEMBLY, E.G. FOR MOSAIC TILES, ELECTRIC CIRCUIT ELEMENTS AND DISPLAY SYSTEMS

Helmut Mauell, Am Rosenhugel 1-3, 5604, Neviges, Germany

Filed Dec. 8, 1971, Ser. No. 205,983
Claims priority, application Germany, Dec. 10, 1970, P 20 60 777.6
Int. Cl. H02b *1/04*
U.S. Cl. 317—101 R **15 Claims**

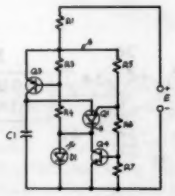


A lattice is formed from a plurality of cell-forming elements connected by bolts to anchors. Each element has at least two connecting portions which each have at least one face abuttable with a similar face of another element and are each formed with a hole that snugly receives one of at least two projections formed on one surface of an anchor. The fastener is a bolt which passes between two two portions and overhangs them so that when screwed down it clamps the two portions to the anchor. A plurality of similar elements are similarly bolted to the other end of the anchor which is elongated and acts as a spacer in order to form a two-level lattice. Tiles, which may carry a schematic drawing of the circuitry they cover, or which may carry circuit elements, are fitted over each cell of the lattice.

3,737,731
FLASHING CIRCUIT

Abraham Zeewy, 2328 Canterbury Road, University Heights, Ohio

Filed Apr. 5, 1971, Ser. No. 131,291
Int. Cl. H03k *3/281*; **H05b** *41/34*
U.S. Cl. 331—111 **11 Claims**

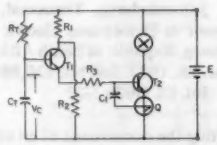


A flashing circuit in which a capacitor is charged through a path whose conductivity varies with the applied voltage across the path. The path includes a transistor whose input current is a function of the applied voltage when the capacitor charges to a predetermined potential; a programmable unijunction transistor breaks down to discharge current from the capacitor through a light-emitting diode. The breakdown of the unijunction transistor applies a change in bias to the base of the transistor in the charging path so as to minimize the charging current and also effects the cutoff of a second transistor in the discharging path and which is in parallel with the light-emitting diode to cause all capacitor current to flow through the light-emitting diode.

3,737,732
TIME DELAY RELAY

Hideo Suemasa, Neyagawa; Kazuyoshi Honda, Kadoma; Kenichi Yoda, Moriguchi, and Toru Hanahara, Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 30, 1971, Ser. No. 176,144
Claims priority, application Japan, Sept. 1, 1970, 45/76800; Mar. 30, 1971, 46/18962
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S **4 Claims**



A time delay relay of the type in which a semiconductor switching element is made conductive after a predetermined time by a RC time constant circuit so as to actuate a relay connected in series with the semiconductor switching element with respect to a power source. The RC time constant circuit is connected to the semiconductor switching element through a transistor element and, among leakage current of the

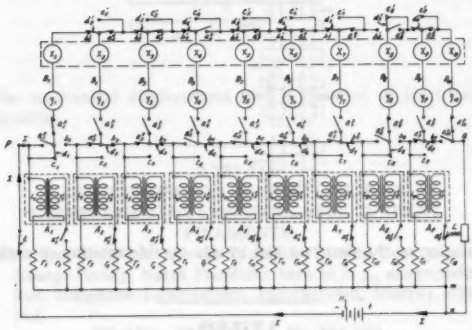
semiconductor switching element, the current flowing through resistor of the RC time constant circuit is restrained to be low utilizing amplifying action of the transistor element, thereby enabling a delaying action for a long time period.

3,737,733

SEQUENTIAL SWITCH ARRANGEMENTS FOR OPERATING ELECTRICALLY CONTROLLED LOCKS

Min-Shung Lin, 28 Park Road 3/F, Taipei, Taiwan

Filed Apr. 20, 1971, Ser. No. 135,570
Int. Cl. E05b 49/00
U.S. Cl. 317—134 9 Claims



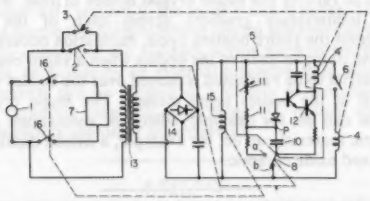
A sequential switch is composed of a plurality of ganged multi-contact switch pairs connected in series, a current path being established to operate a lock when a switch of each pair is set to the correct contact. In a second embodiment, a variable digit sequential switch, the ganged pairs are connected so that a switch of an even number of pairs must be set to the correct contact to close the current path.

3,737,734

COPYING MACHINE

Kitamaro Nakamura, Toyohashi, and Yasuhiko Doi, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 865,837, Oct. 13, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,619
Claims priority, application Japan, Oct. 25, 1968, 43/93731
Int. Cl. H01h 47/18
U.S. Cl. 317—141 S 6 Claims



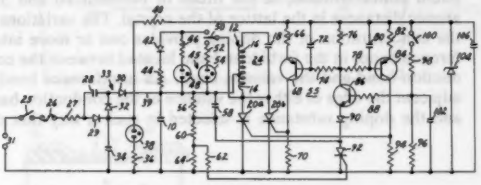
A copying machine having a power switch, an operating switch, a relay with a contact acting as a holding switch in parallel with the power switch, and a timer. The relay is actuated in response to the closing of the operating switch following the actuation of the power switch, so as to hold the power switch. The timer is actuated upon opening of the power switch, so as to de-energize the relay only after a certain predetermined time delay. Whereby, copying operation of an original being copied is completed even if the power switch is opened by mistake in the midst of the copying operation.

3,737,735

AUTOTRANSFORMER ASSISTED RESONATED ENERGY TRANSFER CIRCUIT

Dominic A. Benassi, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 4, 1972, Ser. No. 223,510
Int. Cl. H03k 17/56
U.S. Cl. 317—148.5 B 9 Claims



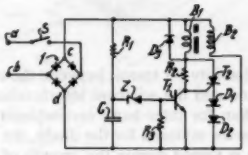
An improved electrical circuit for producing a damped oscillatory magnetic field having an autotransformer as the inductive component of a parallel inductance-capacitance resonant circuit. An SCR is provided for controllably connecting the resonant circuit to a power source. Reverse voltages in the autotransformer commutate the SCR to cause dissipation of energy in a damped oscillation in the resonant circuit. The damped oscillatory magnetic field is useful in systems for detecting magnetic objects.

3,737,736

ELECTROMAGNET-CONTROLLING SYSTEM

Harald Stampfli, Petit-Saconex, Geneva, Switzerland, assignor to Lucifer S. A., Carouge-Geneva, Switzerland

Filed Apr. 4, 1972, Ser. No. 240,354
Claims priority, application Switzerland, Apr. 23, 1971, 5909/71; Germany, June 4, 1971, P 21 28 651.1
Int. Cl. H01h 47/04
U.S. Cl. 317—154 5 Claims



An arrangement for feeding the power winding of an electromagnet with rectified A.C. by means of a thyristor or triac. The latter is inserted in parallel with a transistor the conducting condition of which is provided by a condenser fed by the rectified A.C. and discharging into the base of the transistor which latter acts then on the electrode controlling the thyristor, to allow the latter to return into its non-conductive condition at the end of an alternation. A maintenance or holding current is provided either through an auxiliary electromagnet winding or through a chopped current feeding the power winding and produced by a pulse generator.

3,737,737

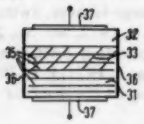
SEMICONDUCTOR DIODE FOR AN INJECTION LASER

Walter Heywang, Neukeferloh; Guenter Winstel, Ottobrunn, and Karl-Heinz Zschauer, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 6, 1971, Ser. No. 187,029
Claims priority, application Germany, Oct. 9, 1970, P 20 49 684.8
Int. Cl. H05b 33/00
U.S. Cl. 317—234 R 5 Claims

A semiconductor diode for an injection laser characterized by a pn junction which has a lower threshold value for the

diode current and/or which diode is capable of continuous operation at room temperature or above. The radiation producing range or zone of the pn junction has a variation in the concentration of doping with the variation being spatial and periodic. Variations have a maximum concentration of doping in a range of about 10^{18} through 10^{20} parts per cubic centimeter, a ratio of maximum concentration to minimum concentration of at least 2:1, and a distance between maximum concentrations, in the order of between 10 and 500 atomic distances in the lattice of the crystal. The variations in the concentration of the doping provides one or more interference bands in the forbidden band located between the conduction band and the valence band. An interference band is adjacent the edge of either the valence or the conduction band and the doping substance is selected in such a way that the



transition probability for transit between the conduction band or valence band and the adjacent interference band is essentially larger than for inter-band recombination. To produce the semiconductor material for the diode, the doping material concentration is varied during the growth of the crystal. For example, if the crystal is grown from a gas phase by an epitaxial deposition, the concentration of doping material in the gas phase is varied with respect to the desired periodicity and with respect to the speed and time for the growth of the crystal. If the crystal is formed by epitaxial deposition of the material from the liquid phase, the variation in doping is caused by variations in the cooling speed with respect to the speed of the growth of the crystal. The periodic doping can be varied also by selection of the rate of cooling by selection of speed of rotation and by excentricity of the crystal pulled from a melt or by growing the crystal with a spiraling growth.

3,737,738

CONTINUOUS STRIP PROCESSING OF SEMICONDUCTOR DEVICES AND NOVEL BRIDGE CONSTRUCTION

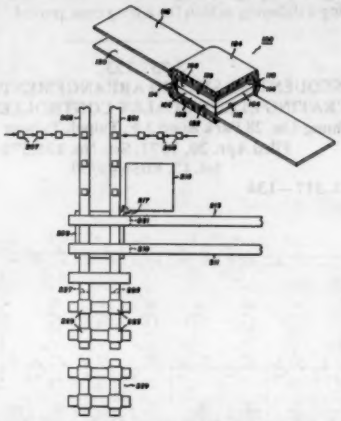
Paul W. Koenig, Clyde, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,291

Int. Cl. H01l 5/00

U.S. Cl. 317—234 R **3 Claims**

Two continuous lead strips are advanced longitudinally to receive a semiconductor element therebetween. The semiconductor element is attached to the strips, the semiconductor element is encapsulated, and the strips are segmented to form a semiconductor device. The strips may be fed in side by side or transverse relation. To form a bridge two strips are fed in side by side relation while two more strips are fed in transverse



relation to the first two and in side by side relation to each other.

3,737,739

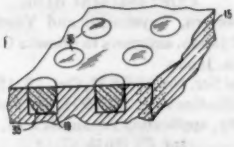
SINGLE CRYSTAL REGIONS IN DIELECTRIC SUBSTRATE

A. Eugene Blakeslee, Mount Kisco; Thomas F. Gukelberger, Jr., Hopewell Junction, and Vincent J. Lyons, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 697,770, Jan. 15, 1968. This application Feb. 22, 1971, Ser. No. 117,474

Int. Cl. H01l 5/00

U.S. Cl. 317—235 R **4 Claims**



A structure having single crystal islands in a dielectric substrate is described. The substrate has recesses formed in its surface to receive the single crystal bodies therein. By applying a temperature gradient across each of the bodies throughout the entire heating cycle, nucleation occurs only at a bottom point on each of the bodies when a vapor containing the material to be nucleated is passed over the bodies with the material of the bodies being molten. The single crystalline material can be, for example, silicon or germanium and the dielectric material can be, for example, a silicon dioxide glass or a mixed oxide ceramic.

3,737,740

SOLID-STATE MAGNETO ELECTRICAL TRANSDUCER

Tadashi Yamada, Suita; Akio Yamashita, Ikeda; Masaru Tanaka, Toyonaka; Takehiro Tsuzaki, Osaka, and Takashi Fujita, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

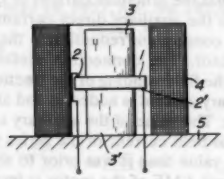
Continuation of Ser. No. 748,991, July 31, 1968, abandoned. This application Nov. 8, 1971, Ser. No. 196,821

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 317—235 R **3 Claims**

A solid-state mechano-electrical transducer having means which is subject to a mechanical displacement when a mag-

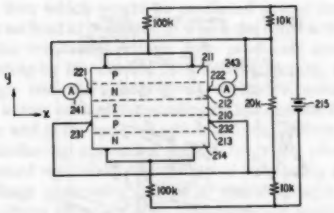
netic force is applied and a solid-state element which converts the mechanical displacement into a variation in electrical quantity.



3,737,741
SEMICONDUCTOR DEVICES UTILIZING GEOMETRICALLY CONTROLLABLE CURRENT FILAMENTS

Dirk Jan Bartelink, Morris Township, Morris County, and George Persky, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1971, Ser. No. 201,093
Int. Cl. H01 *11/10*
U.S. Cl. 317—235 R **10 Claims**



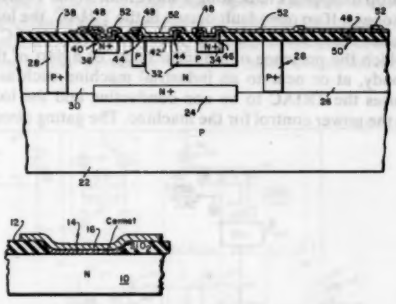
A PNIPN (or PNPN) semiconductor structure, with a pair of terminals on each of the intermediate N and P zones, is forward biased with respect to the outer P and N zones. Thereby, a current filament is formed whose lateral position can be controlled by control of the voltages across each of the pairs of terminals, as well as by an external magnetic field. Such current filaments can be utilized in a variety of semiconductor devices including magnetic field detectors, optical cameras, binary encoders and other logic devices.

3,737,742
MONOLITHIC BI-POLAR SEMICONDUCTOR DEVICE EMPLOYING CERMET FOR BOTH SCHOTTKY BARRIER AND OHMIC CONTACT

David R. Breuer, Malibu, and James L. Buie, Panorama City, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 30, 1971, Ser. No. 185,137
Int. Cl. 317 *235 AC*; H01 *11/00, 15/00*
U.S. Cl. 317—235 R **16 Claims**

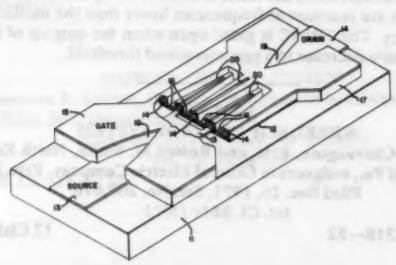
A layer of cermet material, deposited in a single processing step, connects the base and collector regions of a bipolar transistor to form a Schottky barrier diode therebetween; makes ohmic contact to highly doped shallow diffused regions such as the emitter and collector contact areas; provides a barrier by preventing the interaction of contact metal and the shallow diffused semiconductor regions; and produces a thin film resistor of low parasitic capacitance for connection to the transistor.



3,737,743
HIGH POWER MICROWAVE FIELD EFFECT TRANSISTOR

Herbert Goronkin, Syracuse, and John W. Lunden, Camillus, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,503
Int. Cl. H01 *5/00*
U.S. Cl. 317—235 R **17 Claims**



The present invention relates to field transistors having source and drain electrodes in ohmic contact with a semiconductor body, and having an intervening gate electrode of the Schottky barrier type. The present device is designed for high power and high frequency applications. These capabilities are achieved by use of a meandering channel of appreciable width, to which an efficient path for power transmission is provided at both low and high frequencies. The path entails the use of an additional conductive layer superimposed over the source and drain metallizations and not only providing a low resistance d.c. path to the gate, but also forming an efficient low phase dispersion transmission line into the active region of the device.

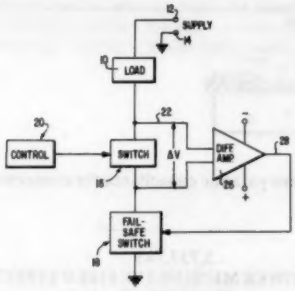
3,737,744
BODY DETECTING INDUSTRIAL SAFETY SYSTEM

Harry R. Bader, Jr., East Aurora, N.Y., assignor to Bader Development Corp., Cheektowaga, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,333
Int. Cl. H02h *7/00*
U.S. Cl. 317—33 R **7 Claims**

An industrial safety system includes an improved fail-safe system in which a TRIAC switch is connected in series with a relay switch and with a load circuit to complete the circuit from a source through the load. A gating circuit for the

TRIAC normally provides a closed switch effect so that a normal voltage drop appears across the TRIAC. An amplifier detects this voltage drop and keeps the relay closed but when the voltage drop disappears indicating a short fault in the TRIAC, the relay opens. If an open fault occurs in the TRIAC, the load circuit is not completed. The gating circuit for the TRIAC is one in which the presence of a human body, or a part of the human body, at or near to an industrial machine such as a press causes the TRIAC to be non-conductive and the load circuit is the power control for the machine. The gating circuit



is driven by an oscillator and features a pair of parallel LC tuned circuits one of which has a fixed frequency response and the other of which includes an antenna as the capacitive element so as to have a variable frequency response dependent upon the prohibited presence of the human body. The frequency response of the fixed circuit is lower than that of the variable circuit when the latter is unaffected by a human body and both are resonant at frequencies lower than the oscillator frequency. The TRIAC is gated open when the outputs of the two circuits decrease to a predetermined threshold.

3,737,745

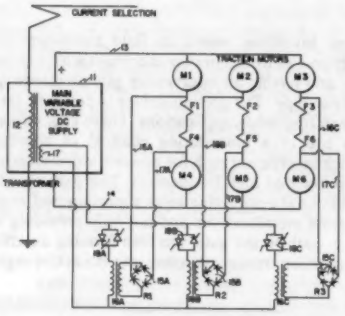
WHEEL SLIP CONTROL SYSTEM

Rene J. Chevaugeon, Erie, and Russell M. Smith, North East, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 16, 1971, Ser. No. 208,670

Int. Cl. B61c *15/12*

U.S. Cl. 318—52 **12 Claims**



A wheel slip control system for electric traction motor drives using series type direct current traction motors having the field and armature windings connected in series electrical circuit relationship and generally employed in connection with electrically driven vehicles such as electric locomotives and the like. The wheel slip control system comprises a wheel slippage detector in the form of a measuring bridge, tachometer or the like for detecting slippage of any one of a number of series type direct current traction motors employed in driving the vehicle and deriving an output indication of any slippage. An auxiliary source of direct current is connectable to the series connected field-armature circuit of the respective series type traction motors in parallel with and in addition to the normal direct current excitation connections to the traction motor. The polarity of connection of the auxiliary direct current source is such that the armature current of the traction motor is reduced upon the auxiliary direct current excitation being supplied with a consequent reduction in the tractive effort of the traction motor. The connection preferably is in aiding relation across the field winding of the traction motor in which event the auxiliary current is added to and aids the normal excitation current. The value of the auxiliary current is adjusted to maintain total field current of the series type motor at the same or higher value than it was prior to slippage. As a consequence the back EMF of the motor is increased due to the slippage thereby reducing the armature current and the tractive effort of the motor to correct the slippage. A wheel slip control circuit also is provided which is responsive to the wheel slippage detector and controls the connection of the auxiliary source of direct current to the field-armature circuit of the series type traction motor for achieving the desired reduction in tractive effort upon detection of a slippage condition.

3,737,746

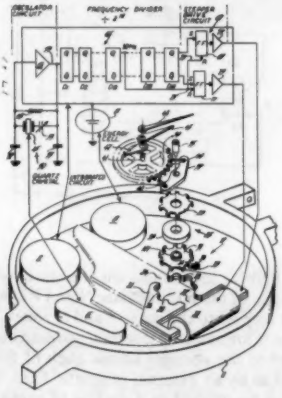
QUARTZ CRYSTAL CONTROLLED STEPPER MOTOR

Edward F. Cielaszyk; Robert S. Lundin, and Frank W. Stellwagen, Mesa, Ariz., assignors to General Time Corporation, Thomaston, Conn.

Filed Apr. 19, 1972, Ser. No. 245,592

Int. Cl. H02k *33/16*

U.S. Cl. 318—130 **6 Claims**

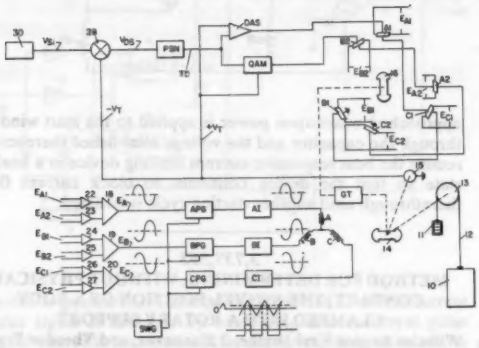


A battery powered self-starting stepper motor driven by pulses of alternating polarity derived from a quartz crystal oscillator via a divider circuit. The output of the quartz crystal oscillator is connected to a divider circuit which divides the high frequency output of the oscillator down to 1 Hz. The complementary outputs of the last divider stage are coupled to a pair of bistable circuits and the output of an intermediate divider stage is connected to the reset terminals of the bistable circuits to limit the pulse width or duty cycle of the pulses generated by each bistable circuit. The respective outputs of the bistable circuits are coupled to the energizing winding on the stator core of the stepper motor via a drive circuit such that the pulses from one of the bistable circuits are passed through the winding in a first direction and the pulses from the other bistable are passed through the winding in the opposite direction.

3,737,747
SERVOMECHANISM INCLUDING A POLYPHASE ALTERNATING CURRENT SYNCHRONOUS MOTOR

Otto Albert Krauer, Tuckahoe, N.Y., assignors to Otis Elevator Company, New York, N.Y.

Filed May 10, 1971, Ser. No. 141,683
Int. Cl. H02p 5/28
U.S. Cl. 318—178 12 Claims



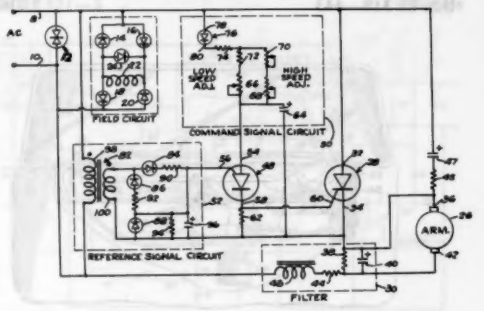
A servomechanism including a polyphase alternating current synchronous motor and a variable frequency, variable magnitude voltage generating means, said generating means comprising transducing apparatus responsive to the position of the rotor of said motor as well as to a desired speed signal and an actual speed signal to generate signals signifying those components of the voltages to be applied to the stator phase windings of said motor to balance, one, the counter electromotive fore which would be produced across each phase winding at no load at the speed at which the rotor is then rotating and the resistance voltage drop produced across each phase winding by the current then flowing therein, and, two, the leakage and the synchronous reactance voltage drop produced across each phase winding by the current then flowing therein and at the speed at which the rotor is then rotating. These transducing apparatus signals for each phase, after being summed vectorially, caused signal translating apparatus of the voltage generating means to apply voltages to their respective stator phase windings to operate said motor according to said desired speed signal.

3,737,748
MOTOR SPEED CONTROL CIRCUIT WITH UNIJUNCTION TRANSISTOR LINE VOLTAGE COMPENSATION

Phillip J. Teders, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Nov. 3, 1971, Ser. No. 195,404
Int. Cl. H02p 5/16
U.S. Cl. 318—331 29 Claims

An adjustable speed control circuit for a DC motor which automatically compensates for variations in both motor load and the voltage level of an AC source which supplies power for driving the motor. A command signal circuit and a reference signal circuit develop command and reference signals respectively which are applied to a solid state switch. The solid state switch operates in response to a certain differential between the command signal and the reference signal to cause current to be conducted from the AC source to the motor during the positive half-cycle of the AC voltage. The reference signal is a function of the AC line voltage and the command signal, a function of the AC line voltage, the motor armature voltage and the setting of an adjustable speed selector resistor in the command signal circuit. When the adjustable speed selector resistor is operated toward a minimum speed position, the necessary signal differential for operating the solid state switch occurs later in the positive half-cycle so that the duration of application of the positive half-cycle of AC line voltage to the motor armature is reduced; when operated toward a maximum speed position, earlier in the half-cycle so that the duration is increased. A change in motor load affects only the command signal so that the necessary differential for operating the solid state switch occurs either

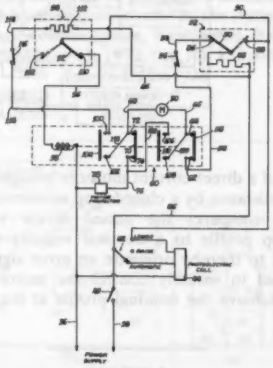


earlier in the positive half-cycle for an increased load or later in the positive half-cycle for a reduced load to thereby maintain the selected motor speed in spite of load changes. Any variation in AC line voltage affects both the command and reference signal circuits in offsetting fashion so that the point at which the necessary differential for operating the solid state switch occurs is at essentially the same point of the positive half-cycle.

3,737,749
MOTOR CONTROL SYSTEM

Theodore F. Schmit, Chicago, Ill., assignor to Electronic Flag Poles, Inc., Maywood, Ill.

Filed June 16, 1972, Ser. No. 263,458
Int. Cl. G05b 9/02
U.S. Cl. 318—472 5 Claims



A system for controlling the operation of a reversible electric motor employed in raising and lowering a flag in an automatic flagpole, including thermally responsive current-sensing switching devices and an electromagnetic relay means in a circuit with the motor and arranged to reverse the motor's direction in response to a predetermined overloading due to obstruction to the free movement of the flag-carrying halyard driven by the motor and to restart the motor in its original direction of rotation after a predetermined time delay.

3,737,750

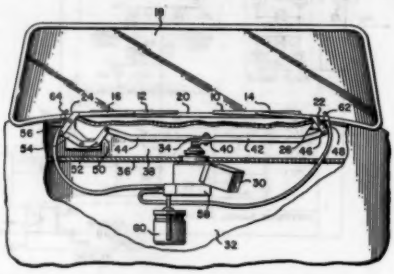
MOTOR SPEED CONTROL

Robert W. Kearns, Detroit, Mich., assignor to Tann Co., Detroit, Mich.

Division of Ser. No. 666,549, Sept. 1, 1967, Pat. No. 3,573,584, which is a continuation-in-part of Ser. No. 414,973, Dec. 1, 1964, Pat. No. 3,351,836. This application Apr. 27, 1970, Ser. No. 43,277

Int. Cl. B60s *1/08*

U.S. Cl. 318—443 **5 Claims**



A windshield wiper control which operates the wiper blades continuously or intermittently with a dwell period between each wiping cycles. In the intermittent operation the wiper blades are responsive to the condition of the windshield. Transistors are provided for controlling the intermittent operation and also for controlling the continuous mode of operation.

3,737,751

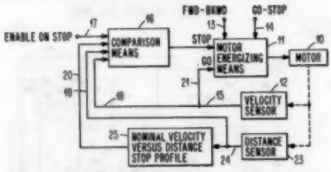
SERVOMECHANISM STOP CONTROL

Philip J. Lima, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 24, 1971, Ser. No. 156,222

Int. Cl. H02p *5/06*

U.S. Cl. 318—463 **12 Claims**



Rotation of a direct current motor is brought to a stop in a preselected distance by a closed-loop servomechanism which periodically compares the actual motor velocity-versus-distance stop profile to a nominal velocity-versus-distance stop profile, to thereby originate an error signal. This error signal is used to variably control the motor in a manner devised to achieve the nominal profile at the next distance checkpoint.

3,737,752

MOTOR CONTROL SYSTEM

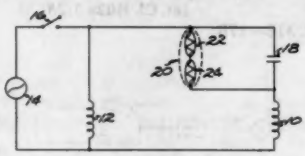
Richard W. Strachan, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 9, 1971, Ser. No. 132,846

Int. Cl. H02p *1/44*

U.S. Cl. 318—471 **10 Claims**

A system adapted for use in controlling an electric motor having a start winding, a run winding, and a capacitor connected to the start winding is disclosed in which a heat responsive current limiting device, the electrical resistance of which increases abruptly at a predetermined transition temperature, is connected in parallel relationship with the capacitor and coupled to the start winding so as to permit power to be supplied to the start winding therethrough only during starting of the motor until the predetermined transition temperature is



approached whereupon power is applied to the start winding through the capacitor and the voltage established thereacross retains the heat responsive current limiting device in a heated state so that the device continues to block current flow therethrough until another starting cycle is initiated.

3,737,753

METHOD FOR DETERMINING, WITHOUT PHYSICAL CONTACT, THE SWIVEL POSITION OF A BODY CLAMPED INTO A ROTARY SUPPORT

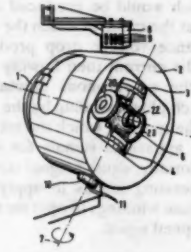
Wilhelm August Karl Junike, 3 Hannover, and Theodor Franz Hauck, Berlin, both of Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Comp. AG, Bielefeld, Germany

Filed Nov. 3, 1971, Ser. No. 195,325

Claims priority, application Germany, May 4, 1971, P 21 22 051.9

Int. Cl. G05b *19/28*

U.S. Cl. 318—602 **8 Claims**



Apparatus for determining the swivel position of a body which is clamped into a rotary support rotating about a rotational axis and which is swiveled about a swivel axis that is angularly offset in relation to the rotational axis, and doing so without relying on physical contact. One or more transmitter element is supported on a rotary support and is swingable with the body eccentrically about the swivel axis. One or more scanning probe is disposed in a fixed position adjacent the rotary support, so that the transmitter element is moved past it without touching it when the support rotates. An interpretive device is controlled by the scanning probe and evaluates the offset of the transmitter element in relation to the scanning probe caused by the swiveling of the transmitter element, thereby determining the swivel position of the body.

3,737,754

STORED ENERGY STABILIZATION SYSTEM

Bernard R. Katz, Irvington, N.J., assignor to The Lummus Company, Bloomfield, N.J.

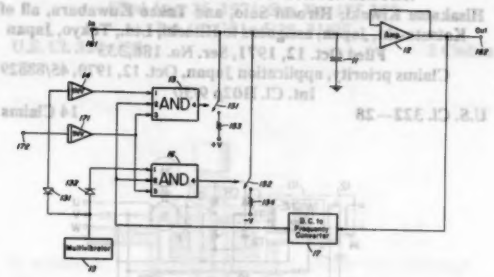
Filed Mar. 19, 1971, Ser. No. 126,250

Int. Cl. H02j *7/00*; H02m *3/00*

U.S. Cl. 320—1 **12 Claims**

A method of stabilizing the energy stored by a reactive storage device, and the apparatus therefor, are provided in ac-

cordance with the teachings of the present invention. The amount of energy depleted from said reactive storage device by the inherent leakage characteristics thereof is determined and additional energy is supplied to said reactive storage device accordingly. A recurrent pulse signal having a period dependent upon the energy stored by the reactive storage

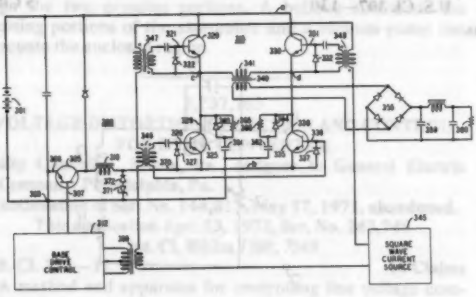


device is generated. A change in the period of said recurrent pulse signal is detected by comparing said recurrent pulse signal with reference pulses. The energy stored by the reactive storage device is selectively incremented and decremented in accordance with the comparison of said recurrent pulse signal with said reference pulses.

3,737,755
REGULATED DC TO DC CONVERTER WITH REGULATED CURRENT SOURCE DRIVING A NONREGULATED INVERTER

Edwin Theodore Calkin, Parsipanny; Billy Harold Hamilton, Summit, and Frank Carl La Porta, Livingston, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 22, 1972, Ser. No. 236,889
Int. Cl. H02m *3/28*
U.S. Cl. 321—2 **9 Claims**

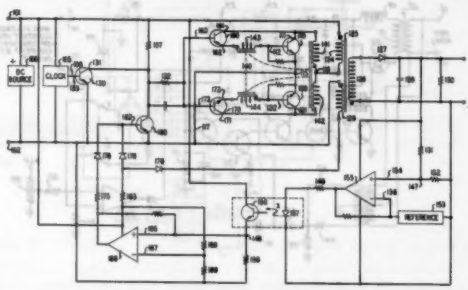


A regulated DC to DC converter comprises a switching-type regulated current source driving a non-regulated bridge-type inverter. The output signal of the converter is regulated by pulse width modulating the switching device in the switching regulator. The output impedance of the current source is inductive. This inductive impedance, which comprises the freewheeling or flyback inductor of the switching regulator, operates as the principal filter inductor of the converter. This regulator-inverter combination advantageously simplifies the switching control of the inverter switching devices and reduces the switching losses therein. It eliminates the switching control problems which normally occur due to switchthrough phenomena and the saturation of the inverter transformer.

3,737,756
CONVERTER CIRCUIT WITH BALANCED PARALLEL SWITCHING PATHS

Andrew Daniel Hasley, Basking Ridge, and Richard Howard Hock, Landing, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 15, 1972, Ser. No. 253,502
Int. Cl. H02m *3/14*; G05f *1/58*
U.S. Cl. 321—2 **8 Claims**

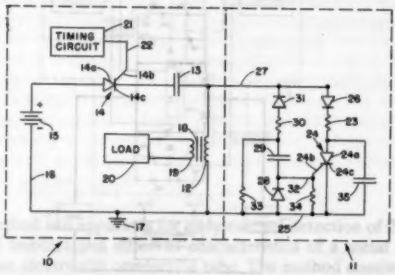


A single ended converter includes a differential transformer arrangement to constrain paralleled switching transistors to operate with equal current loads. The differential transformer has magnetically coupled windings in the output and the base drive circuits in each of the switching transistors. If the switching transistors conduct unequal currents, flux is produced in the differential transformer which generates base drive signals to restore equal current loads in the paralleled switching transistors. The output voltage is regulated by a feedback circuit which controls the switching of the paralleled switching devices. The feedback circuit operates in a pseudo-random fashion and hence switches the transistors at varying frequencies and varying duty cycles. This advantageously reduces the acoustic noise of the converter.

3,737,757
PARASITIC SUPPRESSING CIRCUIT

John T. Fowler, Winthrop, and Frank L. Raposa, Concord, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 15, 1972, Ser. No. 253,405
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **9 Claims**



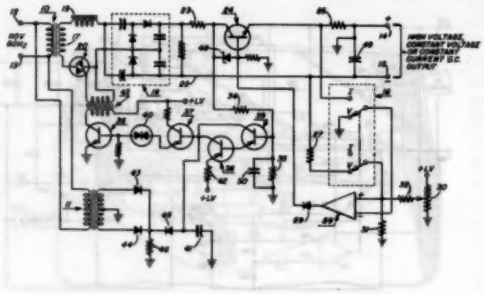
A circuit for suppressing parasitic oscillations across an inductor operating in a resonant mode is described. The circuit includes a switch means and resistive means connected serially across the inductor. A unidirectional resistive-capacitive network is also connected across the inductor and to the switch means to automatically render the switch means conducting when inductive current through the inductor ceases to flow.

3,737,758

SWITCH-MODE VOLTAGE AND CURRENT REGULATOR

Robert W. Allington, 1551 Ridgeway, Lincoln, Nebr.

Continuation of Ser. No. 64,094, July 28, 1970, which is a continuation of Ser. No. 771,521, Oct. 29, 1968. This application Nov. 3, 1971, Ser. No. 195,519
Int. Cl. H02m 7/00
U.S. Cl. 321—18 15 Claims



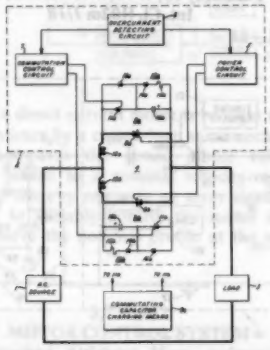
An alternating current input to direct current output power supply providing a regulated constant voltage or constant current output and incorporating a switching-mode preregulator and a postregulator. Regulation is primarily obtained by means of a bidirectional switching element operated at a relatively low voltage and the alternating current voltage output from the switching element and an associated power transformer is applied to a rectifying voltage multiplier to produce a high voltage output. A series-pass output regulator, is controlled by negative feedback derived from the output circuitry and negative feedback from such regulator controls the switching element.

3,737,759

STATIC SWITCH INCLUDING SURGE SUPPRESSING MEANS

Ernest M. Pollard, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 1, 1972, Ser. No. 230,559
Int. Cl. H02m 7/00
U.S. Cl. 321—45 C 2 Claims



Disclosed is a forced commutation static switch composed of inverse parallel connected thyristors. Commutation circuits are respectively connected across the thyristors. Means for suppressing commutation generated switching transients are coupled to a portion of the commutation means, and means for suppressing external voltage surges are coupled to another portion of the commutation means.

ERRATUM

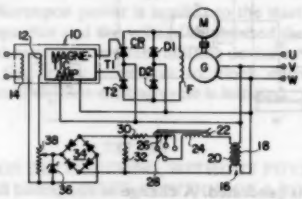
For Class 321—11 see:
Patent No. 3,737,763

3,737,760

VOLTAGE CONTROL APPARATUS FOR AN ALTERNATING CURRENT GENERATOR

Hisakatsu Kiwaki; Hiroshi Sato, and Takeo Kuwabara, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1971, Ser. No. 188,333
Claims priority, application Japan, Oct. 12, 1970, 45/88829
Int. Cl. H02p 9/30
U.S. Cl. 322—28 14 Claims



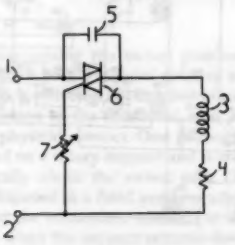
A voltage control apparatus for an alternating current generator comprising an alternating current generator which is self-excited, an electric motor for driving the generator, a control rectifier arrangement for exciting the field winding of the generator by rectifying the output voltage of the generator, a phase shifter for controlling the control rectifier, a saturable reactor excited by the output of the generator, a rectifier for rectifying the current flowing through the reactor to supply a control input for the phase shifter, and a resistor connected across the alternating current terminals of the rectifier to bypass the current of the reactor.

3,737,761

VOLTAGE ADAPTOR CIRCUIT

Dieter H. Walther, 851 Furth, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,359
Int. Cl. H02j 3/04; G05f 5/00
U.S. Cl. 307—130 5 Claims

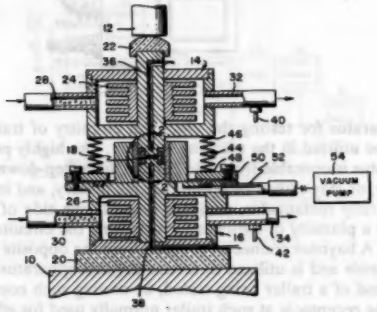


An electrical circuit for automatically adapting an inductive load to that of one of two possible A.C. supply voltages applied across the circuit. The circuit comprises a capacitor connected in series with the load. The capacitor value is such that a series resonant circuit is formed with the load at a frequency of operation. A controlled semiconductor device having a pair of terminals and a gate terminal is connected with the pair of terminals in parallel across the capacitor. The gate terminal is connected through a non-linear current-voltage characteristic electrical component to one of the terminals of the A.C. supply voltage. For the lower A.C. supply voltage, the capacitor and inductor form a series resonant circuit and at the higher A.C. supply voltage, the controlled semiconductor device short circuits the capacitor.

3,737,762
APPARATUS AND METHOD FOR MEASURING THE SEEBECK COEFFICIENT AND RESISTIVITY OF MATERIALS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Vaclav Hadek, 3246 North Mount Curve, Altadena, Calif.

Filed Aug. 26, 1971, Ser. No. 175,267
Int. Cl. G01r 5/28, 31/00
U.S. Cl. 324—32 **2 Claims**



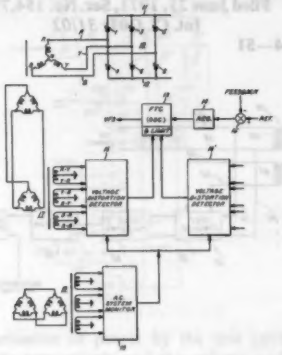
Apparatus for measuring the thermoelectric properties of materials under high pressure, including a pair of force transmitting assemblies constructed of thermally and electrically conductive material positioned between the ram and anvil of a press. Each force transmitting assembly has a small diameter pressing portion for contacting a face of the sample so that the sample can be squeezed between them. Each assembly also includes a heat exchanger to maintain the sample face at a controlled temperature, and an electrical conductor to carry current generated by the sample. A sleeve of thermally and electrically insulative material closely surrounds the pressing portions of the two assemblies to confine the sample and to help align the two pressing portions. A bellows surrounds the pressing portions of the assemblies and a vacuum pump can evacuate the enclosed region.

3,737,763
VOLTAGE DISTORTION DETECTION AND CONTROL FOR HVDC CONVERTER

Philip Chadwick, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 144,017, May 17, 1971, abandoned.
This application Apr. 13, 1972, Ser. No. 243,748
Int. Cl. H02m 1/08, 7/48
U.S. Cl. 321—11 **14 Claims**

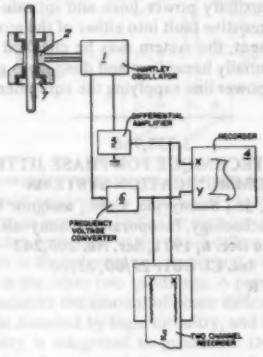
A method and apparatus for controlling line voltage commutated, thyristor bridge power converters operated in the inverting mode comprising sampling the value of the thyristor valve commutating voltage appearing across the respective thyristor valves at a particular point in a cycle in advance of commutation, comparing the instantaneous value of a freshly sampled thyristor valve voltage to a stored value of the valve voltage of the previously conducting thyristor valve, detecting any difference between the instantaneous and stored values of valve voltage for use as an output error control signal, and directly applying the output error control signal back to control the firing angle of advance β of the next thyristor valve to fire in the power converter. The power converter is normally controlled by a main or normal control regulation loop having a relatively slow speed of response and the output error control signal from the comparison circuit is supplied back directly in parallel with and in addition to the normal control regulation loop as a fast responding control capable of controlling the firing angle of advance β of the next thyristor valve to be rendered conductive in the power converter.



3,737,764
EDDY-CURRENT TEST APPARATUS FOR DETECTION OF FLAWS IN A METAL SEAL PLACED WITHIN AN ELECTRICALLY CONDUCTIVE TUBE

Jean-Pierre Dufayet, Aix-En Provence, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Sept. 27, 1971, Ser. No. 183,852
Int. Cl. G01r 33/12
U.S. Cl. 324—40 **1 Claim**

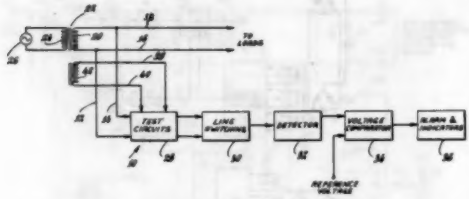


A method and apparatus for eddy-current detection of flaws such as bubbles and different characteristics of a metal seal within an electrically conductive tube. The method consists in recording separately on the one hand the variations in potential which are directly related to variations in amplitude of the eddy currents as a function of the cross-section of the tube and on the other hand the variations in the frequency of said currents also as a function of said cross-section while also recording simultaneously with these two variations the variations in said potential as a function of said frequency, the frequency of the eddy currents being determined as a function of the nature and shape of the tube and of the seal.

3,737,765
ISOLATED POWER GROUND FAULT DETECTOR SYSTEM

Sung C. Lee, Bridgeport, Conn., and Edward P. Burns, West Redding, Conn., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed June 21, 1971, Ser. No. 154,795
Int. Cl. G01r 31/02
U.S. Cl. 324—51 7 Claims



A ground fault detector system for isolated power lines, especially those for use with operating room and intensive care monitoring equipment including an isolated test circuit arrangement for checking the operation of the system, that does not itself introduce potentially hazardous and dangerous ground faults into the isolated power lines being monitored. More specifically, the isolated power ground fault detector system of the present invention functions to alternately connect a detector circuit to the power lines at a frequency which is a submultiple of the source frequency. The detector senses both capacitive and resistive ground faults and provides an output voltage signal representative of the magnitude of the ground fault. This output voltage signal is compared to a reference voltage in a voltage comparator which activates alarms and indicators if the ground fault exceeds a preset threshold value. The system also includes a test circuit for checking the operation of the system which when actuated simultaneously switches the detector system from the isolated power lines to auxiliary power lines and introduces a simulated capacitive resistive fault into either of the auxiliary lines. By this arrangement, the system may be checked without introducing a potentially hazardous and dangerous ground fault into the isolated power line supplying the equipment.

3,737,766
TESTING TECHNIQUE FOR PHASE JITTER IN COMMUNICATION SYSTEMS

Andre Lubarsky, Jr., Sunnyvale, Calif., assignor to Telecommunications Technology, Incoporated, Sunnyvale, Calif.

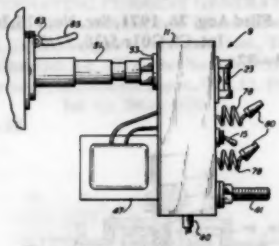
Filed Dec. 6, 1971, Ser. No. 205,242
Int. Cl. G01r 27/00, 25/00
U.S. Cl. 324—57 R 19 Claims

A method and apparatus for measuring phase jitter by monitoring the period of a communication signal output of a communication system each one-half cycle. At each one-half cycle, the width of the signal output is compared with an average one-half period of the signal. Both digital and analog techniques are disclosed for displaying a peak-per-cycle phase jitter and a cumulative peak-to-peak phase jitter of the signal.

3,737,767
TRAILER TESTING APPARATUS

Robert Slutsky, 216 Dellwood Road, Metuchen, N.J.

Filed Dec. 17, 1971, Ser. No. 209,113
Int. Cl. G01r 31/02
U.S. Cl. 324—51 6 Claims

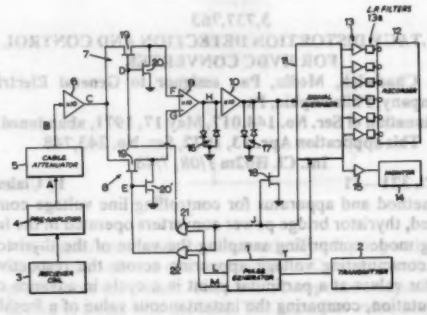


Apparatus for testing the electrical circuitry of trailers of the type utilized in the trucking industry. The highly portable apparatus is operable from line current via a step-down transformer, or may utilize an accompanying battery, and includes a generally rectangular, enclosed chassis, one side of which carries a plurality of switches for actuating the circuits being tested. A bayonet connector projects from the opposite side of the chassis and is utilized to secure the test apparatus to the front end of a trailer being tested, by mating such connector with the receptacle at such trailer normally used for effecting connection to the tractor electrical cable. The mating of connector and receptacle provides electrical connections for the circuits being tested, physically supports the test apparatus in operative position, and assures positive grounding of the test apparatus to the trailer body.

3,737,768
APPARATUS FOR THE REMOTE DETECTION OF CONDUCTING BODIES UTILIZING ELECTROMAGNETIC WAVEFORMS EXHIBITING ABRUPT DISCONTINUITIES

Peter G. Lazenby, Streetsville, Ontario, and Hendrik M. Wondergem, Weston, Ontario, both of Canada, assignors to Selco Mining Corporation Limited, Toronto, Ontario, Canada

Filed Feb. 22, 1971, Ser. No. 117,444
Int. Cl. G01v 3/10, 3/16
U.S. Cl. 324—3 5 Claims



In an apparatus for the remote detection of ore bodies, comprising means for radiating a primary electromagnetic waveform exhibiting abrupt discontinuities, means for discerning secondary signals induced in and reradiated from a conducting body together with transient components of such secondary signals, and means for sampling and examining the transient components, the transient components are processed serially and applied to a signal averager providing a number of channels the outputs from which correspond to the

respective time average values of sequential portions of the transient wave form.

3,737,769

AUTOMATIC INSULATION CHARACTERISTIC ANALYZING DEVICE

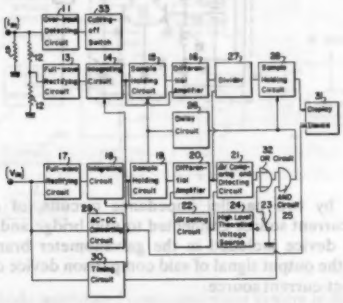
Hitoshi Terase, Nagoya, and Sumio Namikawa, Tokyo, both of Japan, assignors to Kyokuto Boeki Kaisha, Ltd., (Far East Mercantile Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1972, Ser. No. 225,857

Claims priority, application Japan, Mar. 16, 1971, 46/14512

Int. Cl. G01r *31/14*

U.S. Cl. 324—54 **7 Claims**



A rectifier and integrator circuit is provided for rectifying an alternating current voltage corresponding to that applied across a specimen to be tested and obtaining the mean value V of the applied voltage from the rectified voltage, and another rectifier and integrator circuit is provided for rectifying an alternating current flow corresponding to that flowing through the specimen and obtaining the mean value I of the current flow from the rectified current flow. A sample holding circuit is provided for storing the mean value V_1 of the applied voltage as obtained in the previous sampling cycle, and a sample holding circuit is provided for storing the mean value I_1 of the current flow as obtained in the previous sampling cycle. A differential amplifier is provided for receiving the mean value V_1 signal and a signal of the mean value V_2 of the applied voltage as obtained in the following sampling cycle and generating an output corresponding to the difference ΔV between the signals, and another differential amplifier is provided for receiving the mean value I_1 signal and a signal of the mean value I_2 of the current flow as obtained in the following sampling cycle and generating an output corresponding to the difference ΔI between the signals. A divider is provided for obtaining the value of $\Delta I/\Delta V$ characteristic of insulating properties of the specimen, and a sample holding circuit is provided for storing the $\Delta I/\Delta V$ value as obtained just when the difference ΔV reaches a predetermined value and supplying the stored $\Delta I/\Delta V$ value signal to a displaying device. A timing circuit is arranged to control the operations of the said circuits through each sampling cycle so that the insulation characteristics of the specimen can be automatically measured at a high speed.

3,737,770

MICROWAVE THICKNESS MEASURING DEVICE UTILIZING TWO RESONANT CAVITIES ON EITHER SIDE OF THE TEST PIECE

Maurice Masson, Grenoble, and Raymond Warlop, Pont-de-Claix, both of France, assignors to Commissariat A. L'Energie, Paris, France

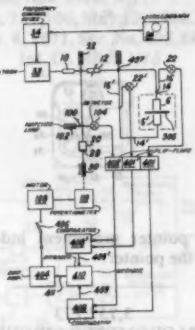
Filed Nov. 27, 1970, Ser. No. 93,235

Claims priority, application France, Dec. 8, 1969, 6942381

Int. Cl. G01r *27/04*

U.S. Cl. 324—58.5 C **2 Claims**

A device for measuring a displacement or the thickness of a sheet comprises a microwave test cavity resonator whose resonance frequency is controlled by said displacement or thickness and a microwave reference cavity resonator. A saw tooth modulated microwave generator supplies microwave energy to both cavities. First and second detector means detect the transmission of power by the test cavity and the reference cavity respectively and the volume and resonance frequency of the reference cavity are automatically adjusted in order to cause said transmissions to coincide in time.



3,737,771

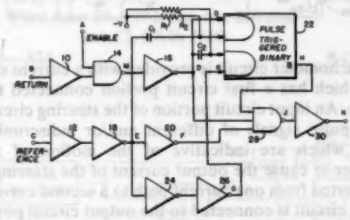
QUADRANT-SELECTIVE LINEAR PHASE CORRELATOR

Joe A. McKenzie, Ridgecrest, and Carl B. Lindsey, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 12, 1971, Ser. No. 198,318

Int. Cl. G01r *25/00*

U.S. Cl. 324—83 A **1 Claim**



Phase correlator circuitry active only in two selectively predetermined quadrants to yield linear phase information for phase returns of less than 180°. The circuitry produces a linear output which is indicative of the phase difference between two input signals in the selected quadrants and which is zero if the signals are in the other two quadrants. A pair of zero-crossing detectors measure the amount of phase difference. The detector output is decoded by logic circuitry, and the output of the logic circuitry is integrated to produce a DC voltage whose amplitude is a function of the amount of phase difference between the input signals.

3,737,772

METER MOVEMENT AND LIMIT STOP

Miles C. Kunz, and Robert L. Esvang, Chicago, Ill., assignors to Sun Electric Corporation, Chicago, Ill.

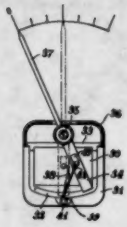
Continuation of Ser. No. 816,129, April 14, 1969, abandoned, which is a continuation of Ser. No. 416,348, Dec. 7, 1964, abandoned. This application June 16, 1971, Ser. No. 153,896

Int. Cl. G01r *1/08, 5/16*

U.S. Cl. 324—154 **18 Claims**

A meter movement having a movable pointer with means for moving the pointer and including a restraining element

comprising one or more flexible members or a pivot link and substantially rigid rod which is attached to the pointer and



which limits the pointer movement independently of the means for moving the pointer.

3,737,773

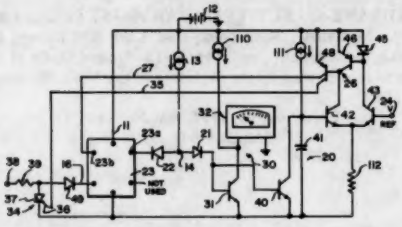
TACHOMETER CIRCUIT

Don William Zobel, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 28, 1971, Ser. No. 166,688

Int. Cl. G01p *3/48, 3/54, 23/02*

U.S. Cl. 324—166 **12 Claims**



A tachometer circuit is provided with a current steering circuit which has a first circuit portion connected to a power source. An input circuit portion of the steering circuit receives input pulse signals of different and/or indiscriminate pulse width which are indicative of the motion of a movable member to cause the output current of the steering circuit to be diverted from one current path to a second current path. A timing circuit is connected to the output circuit portion of the current steering circuit to produce a timed pulse of predetermined duration. Feedback means is provided for applying the timed pulse to the steering circuit to revert its state and again cause current to be directed through the first current path. This will produce a given-width pulse which is integrated with respect to time and used to produce a tachometer reading. An input lockout circuit is connected to the input circuit portion to shunt that portion of the input signal which exceeds the time duration of the given-width pulse.

3,737,774

AUTOMATIC LEVEL CONTROL DEVICE FOR USE IN TELECOMMUNICATION SYSTEMS

Jan Verhagen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

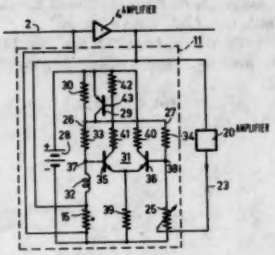
Filed Oct. 6, 1970, Ser. No. 78,381

Claims priority, application Netherlands, Oct. 13, 1969, 6915475

Int. Cl. H04b *3/04*

U.S. Cl. 325—2 **6 Claims**

Automatic level control device for use in telecommunication systems, said device comprising a level control member formed by a current-dependent impedance varying with the level control signal, said device comprising, in order to enable a very accurate adjustment of the level control signal, furthermore a variable current-independent impedance controlled by the level control signal, which together with the said current-dependent impedance forms part of a Wheatstone bridge



formed by two parallel impedance circuits, of a variable direct-current source connected to said bridge and of a comparison device included in the galvanometer branch of the bridge, the output signal of said comparison device controlling the direct-current source.

3,737,775

ANALOG STORAGE ARRANGEMENT USING TRANSFLUXOR

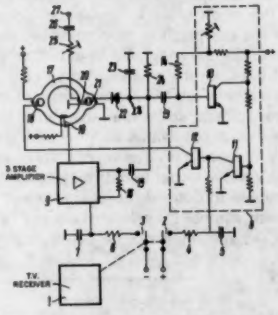
Hans Mangold, Furth, and Hans-Jurgen Adelmann, Furth-Braunsbach, both of Germany, assignors to Grundig Electro-Merchanische Versuchsanstalt Max Grundig, Furth, Germany

Filed Nov. 10, 1971, Ser. No. 197,468

Claims priority, application Germany, Nov. 13, 1970, P 20 55 863.8

Int. Cl. G11c *27/00;* **H04b** *1/06, 7/00*

U.S. Cl. 325—37 **20 Claims**

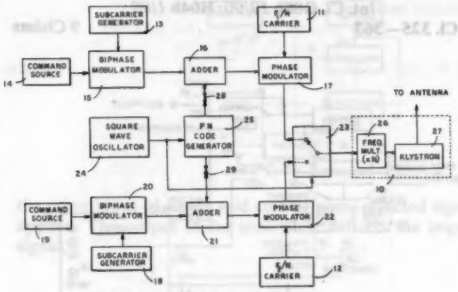


A rectifier is connected to transfluxor output winding. A first feedback circuit is connected between rectifier output and setting winding, a second feedback circuit between rectifier output and blocking winding. The first and second feedback circuits have first and second three-stage amplifier respectively. The operating voltage for one stage of first or second three-stage amplifier applied selectively to produce increase or decrease of stored analog value respectively.

3,737,776
TWO CARRIER COMMUNICATION SYSTEM WITH SINGLE TRANSMITTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Mahlon F. Easterling, 106 Marcheta St., Altadena, Calif.

Filed June 9, 1971, Ser. No. 151,411
Int. Cl. H04j 3/00
U.S. Cl. 325—40 2 Claims

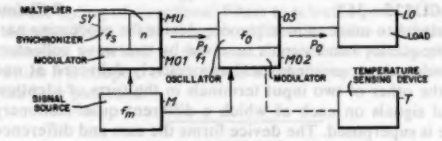


A pulse-code modulated communication system is disclosed for transmitting two subcarrier-modulated carriers from a single transmitter comprising two channels for phase modulating the two carriers independently. The modulating subcarriers are independently modulated by data and/or pseudonoise (PN) codes as desired. The modulated carriers are switched alternately to the single transmitter in synchronism with operation of a PN code generator when PN code modulation is present, as for ranging.

3,737,777
INJECTION PHASE LOCKING DEVICE IN AN FM-TRANSMITTER FOR A SELF-OSCILLATING OSCILLATOR MODULATED BY A MODULATION SIGNAL

Gyorgy Geza Endersz, Hagersten, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed July 2, 1971, Ser. No. 159,327
Claims priority, application Sweden, July 10, 1970, 9580/70
Int. Cl. H03c 3/02; H04b 1/04, 1/66
U.S. Cl. 325—148 8 Claims

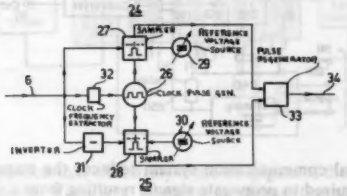


A phase locking arrangement in which a free-running oscillator running with a frequency f_o is injection phase locked by a synchronizing oscillator with a free-running frequency f_s and a multiplier giving a multiplied frequency $n \cdot f_s$. A modulating frequency f_m modulates both the free-running oscillator and the synchronizing oscillator through two direct coupled FM-modulators, so that the free-running oscillator will be continuously tuned to a frequency f_1 which is chosen so that the synchronizing band $\Delta f = f_1 - f_o$ of the free-running oscillator is narrow, so that the synchronizing power from the synchronizing oscillator can be kept low.

3,737,778
DEVICE FOR THE TRANSMISSION OF SYNCHRONOUS PULSE SIGNALS

Petrus Josephus Van Gerwen, and Willem Harmsen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 728,706, May 13, 1968. This application Nov. 4, 1971, Ser. No. 195,889
Int. Cl. H04b 1/16
U.S. Cl. 325—322 3 Claims

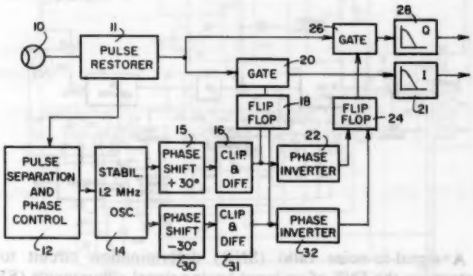


A receiver for a synchronous pulse signal formed with the clock, carrier, and shift frequencies having mutual ratios of integers. The receiver has two channels controlled by a clock pulse generator synchronized to a received signal and followed by a pulse regenerator. The receiver is well suited for an embodiment using integrated circuits.

3,737,779
PULSE TRAIN PROCESSING SYSTEM WITH DISCRIMINATION AGAINST NOISE FOR USE WITH PULSE WIDTH MODULATION

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 29, 1972, Ser. No. 267,663
Int. Cl. H04b 1/10
U.S. Cl. 325—324 8 Claims

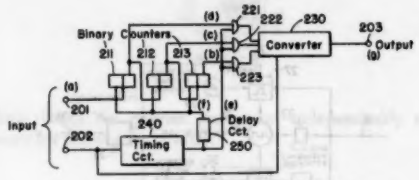


System for separating pulses containing information in a pulse width modulated pulse train, wherein the leading edges of the pulses occur at a fixed repetition rate. Noise which occurs on the leading edge of the pulses is reduced by slicing the fixed position leading edges. A gating wave stabilized by the received pulse train, and which is insensitive to wide band noise, opens a gate for the pulses after the leading edge of each pulse, and closes the gate before the leading edge of the next pulse. A plurality of gates can be provided to separate pulse trains which are multiplexed to form a composite pulse train. The gates do not affect the pulse width modulation represented by the position of the lagging edges of the pulses and reduces the noise accompanying the demodulated signals.

3,737,780
DIGITAL COMMUNICATION SYSTEM EMPLOYING UNITY BIT PER SAMPLING CODING METHOD

Atsushi Tomozawa, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed May 4, 1971, Ser. No. 140,033
Claims priority, application Japan, May 11, 1970, 45/40292
Int. Cl. H04b *1/00*
U.S. Cl. 325—38 B **3 Claims**

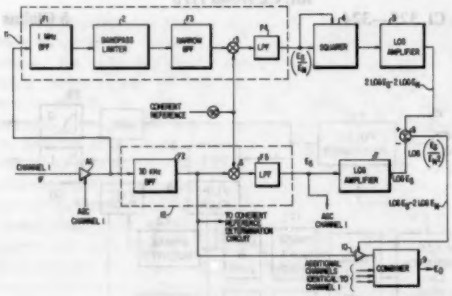


A digital communication system reduces the transmission speed required to propagate signals resulting from a unity bit per sample coding process, e.g., delta modulation or delta-sigma modulation. The modulation wave pulses produced during cyclically recurring code converting intervals are counted and the count state transmitted rather than the modulation signal per se, thereby reducing the signal rate impressed on the communication channel. An inverse procedure is employed for signal recovery.

3,737,781
SIGNAL-TO-NOISE RATIO DETERMINATION CIRCUIT

Leonard F. Deerkoski, Laurel, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 15, 1971, Ser. No. 180,683
Int. Cl. H04b *3/46*
U.S. Cl. 325—363 **10 Claims**

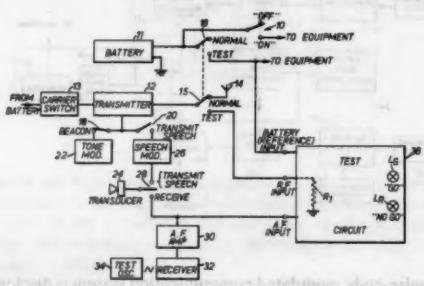


A signal-to-noise ratio (SNR) determination circuit to determine the SNR of an input having signal components (S) within a given frequency range and noise components (N), without actual measurement of the noise (N) components. Input means receive the input, and first filter means having a frequency bandpass range different from said given frequency range are connected to the input means to convert the db level of the input SNR to another level. Bandpass limiter means having a constant signal plus noise output level are connected to the output of the first filter means, the signal-to-noise ratio of the input to the bandpass limiter means being linearly related to the dbm level of signal components at the output thereof, for a given db range of converted SNR input levels. Calibrating means are connected to the bandpass limiter means and are responsive to the signal components at the output thereof to derive the SNR of the input to the determination circuit. The SNR determination circuit is disclosed for use in a diversity receiver having a plurality of input channels. Weighting means are used to weight the channels prior to summation to provide maximum signal-to-noise ratio at the output of a combiner.

3,737,782
RADIO TRANSMITTERS

Reginald Roy Pierce, Hartley, England, assignor to Burndept Electronics (E.R.) Limited, Kent, England

Filed July 13, 1971, Ser. No. 162,097
Claims priority, application Great Britain, July 16, 1970, 34,551/70
Int. Cl. G08b *19/00*; H04b *1/00*
U.S. Cl. 325—363 **9 Claims**



The invention provides a self-test facility for such battery powered transmitter and transmitter/receiver apparatus as radio rescue beacons and includes a test circuit which can be switched to receive the output of the transmitter and give a PASS signal only if all the parameters under test, applied to gating networks, are correct. The circuit described is arranged to test the power output and modulation of the transmitter output the battery E.M.F. of a radio rescue beacon, and also the sensitivity and audio power output of the associated receiver.

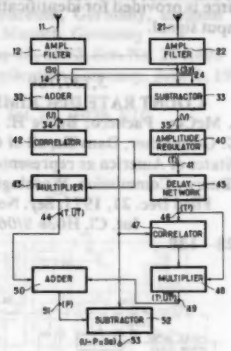
3,737,783
SIGNAL-TO-NOISE RATIO IMPROVING DEVICE FOR RECEIVING SYSTEMS HAVING TWO WAVE COLLECTORS

Jacques Oswald, Versailles, and Yves Rainsard, Antony, both of France, assignors to Compagnie Industrielle Des Telecommunications, Paris, France

Filed May 14, 1971, Ser. No. 143,337
Claims priority, application France, May 15, 1970, 7017868
Int. Cl. H04b *1/12*
U.S. Cl. 325—367 **9 Claims**

A signal-to-noise ratio improving device for processing narrow frequency band signals received by two wave collectors (transducers or antennas) and respectively delivered at one and the other of two input terminals in the form of identical useful signals on each of which a different quasi-stationary noise is superposed. The device forms the sum and difference of the noise-affected signals received at said input terminals and the said difference is processed in a circuit comprising amplitude regulating means, first and second correlators each having two inputs to one of which is fed the said sum and to the other of which are applied, for said first correlator, said amplitude-regulated difference and, for said second correlator, the latter said difference delayed by a fixed time interval. The correlators deliver at their respective outputs signals proportional to the time average of the product of the signals applied to their two inputs. The averaged signals are respectively applied to a first input of each one of two multipliers, to a second input of which are respectively applied said amplitude-regulated difference and said delayed amplitude-regulated difference. The outputs of the multipliers deliver new signals

which are applied to the inputs of an adder, and the output signal from said adder is applied to an input of a subtractor, to



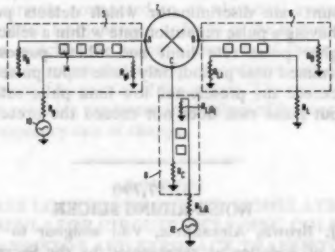
the other input of which said sum of noise-affected signals is applied. The output of the subtractor delivers the improved signal.

3,737,784

CIRCUITS WITH BROAD BAND FLAT FREQUENCY RESPONSES USING DIRECTIONAL FILTERS

Irving Dostis, Palos Verdes Peninsula, Calif., assignor to Communications Satellite Corporation, Washington, D.C.

Filed July 21, 1971, Ser. No. 164,545
Int. Cl. H04b 1/26
U.S. Cl. 325—436 **1 Claim**



Disclosed heren is a technique for producing broad band flat frequency responses using active elements by eliminating mismatch caused energy reflections. The technique provides for the upling of directional filters to selected ports of n active element. Each of the directional filters includes a resistive termination matched to the source impedance of the port to which it is coupled over a broad band of frequencies outside of the filter passband.

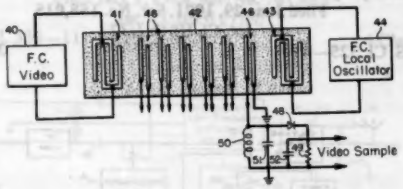
3,737,785

SOLID-STATE SIGNAL DISTRIBUTION SYSTEM

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 24, 1971, Ser. No. 127,698
Int. Cl. H04b 1/26
U.S. Cl. 325—442 **9 Claims**

An acoustic surface-wave device is utilized to distribute coded samples of an information signal among a plurality of output ports. A first surface-wave transducer responds to signals from a source of time-domain information for launching acoustic surface waves in a piezoelectric substrate. The piezoelectric material is one which exhibits a non-linear relationship between an applied electric field and the strain developed by that field; alternatively, non-linear elements are included in the output circuitry. Either by reason of the dispersive nature of the transducer or by treatment of the time-domain signals before their application to the transducer, the surface waves propagate in one direction and exhibit a given mode of spatial dispersion along that path of propagation. A second surface-wave transducer responds to counterpart signals from another source to launch acoustic surface waves in the opposing direction which exhibit a mode of spa-



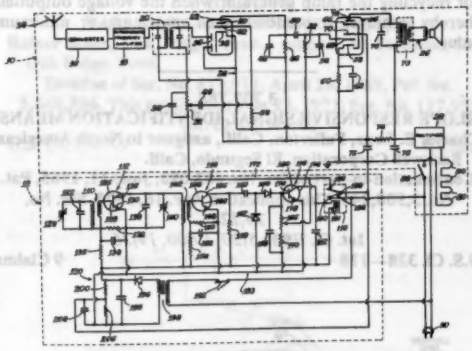
tial dispersion that effectively is the conjugate of the aforesaid given mode. Finally, a plurality of output transducers are spaced successively along the propagation paths. The output transducers are individually responsive to respective different spatially-distributed combinations of the dispersion modes that all have the same frequency but which yield respective different output signals individually corresponding to respective different time-displaced portions of the information signal.

3,737,786

RADIO RECEIVER ADAPTED TO MONITOR WARNING SIGNALS

John J. McDermott, 1446 Suffolk Avenue, Westchester, Ill., and Francis M. Macken, 800 Washington Boulevard, Oak Park, Ill.

Filed June 4, 1971, Ser. No. 149,959
Int. Cl. H04b 1/06
U.S. Cl. 325—466 **9 Claims**



A device, for detecting and demodulating only a transmission of an audio frequency modulated radio frequency carrier signal of a preselected fixed carrier frequency, is selectively interconnected, through switching means, between the demodulating circuit and audio amplification and output circuit of a tunable receiver designed to detect the transmission of audio frequency modulated radio frequency signals of different carrier frequencies. The switching means is further interconnected in the power supply circuit of the tunable receiver so that when the device detects a transmission of a signal at the preselected fixed frequency the switching means provides a power path to the tunable receiver. Simultaneously the switching means impresses a signal, developed in the device, which includes a direct current voltage component and an audio frequency component, on the demodulating and

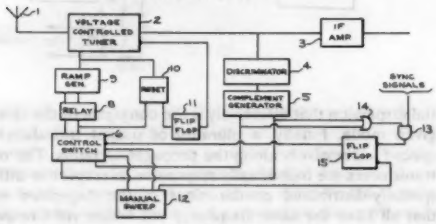
audio amplification circuits in the tunable receiver to suppress signals from the demodulating circuit and permit amplification of the audio frequency component.

3,737,787

ELECTRONIC SIGNAL SEEKING SYSTEM WITH RAPID SCAN

Adolf Wolfram, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed June 29, 1971, Ser. No. 158,015
Int. Cl. H04b *1/32*
U.S. Cl. 325—470 **3 Claims**



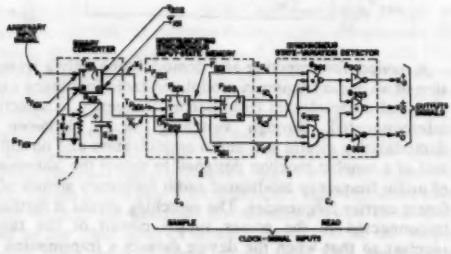
A signal-seeking tuning control system for use with a voltage-controlled tuner. A ramp generator is operated manually to cause the tuner to sweep through a spectrum of channel frequencies. When the converted-frequency signal outputted by the tuner approaches a desired frequency range a discriminator produces an error signal for energizing a control system having three discrete states. when the discriminator output is within a fixed, narrowly defined range the control system arrests the operation of the ramp generator. Should the converted frequency drift beyond the narrow range, the discriminator produces an error signal which reflects the change in frequency, energizing an appropriate segment of the control to operate the ramp generator. Retrace means are provided for recycling the ramp generator when the voltage outputted thereby achieves a predetermined maximum or minimum value.

3,737,788

SLOPE RESPONSIVE SIGNAL IDENTIFICATION MEANS

Charles E. Lenz, Fullerton, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 463,090, June 11, 1965, Pat. No. 3,508,246. This application Apr. 16, 1970, Ser. No. 29,221
Int. Cl. H03k *5/20, 19/00, 19/36*
U.S. Cl. 328—118 **9 Claims**



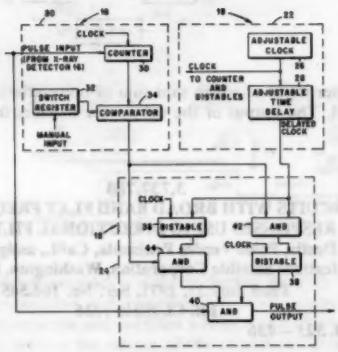
A slope responsive signal identification means which is excited by at least one input signal. The system has a circuit for quantizing the input signal, which quantizer provides a binary output. There is also available a clock pulse supply source the output of which together with the output of the quantizer is fed to a memorizer circuit which provides memorization of the state of logic of the binary output. Additionally a circuit responsive to the memorizer and clock pulse supply source is provided for identification of the slope polarity of the input signal.

3,737,789

COUNT RATE DISCRIMINATOR

Donald D. McCoy, Pacheco; Bruce H. Shue, Livermore, and Ralph G. Gutmacher, Danville, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 21, 1971, Ser. No. 210,343
Int. Cl. H03k *9/06*
U.S. Cl. 328—138 **1 Claim**



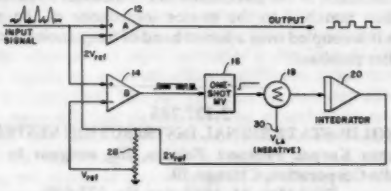
A count rate discriminator which detects pulsed input signals having a pulse repetition rate within a selectable lower and higher pulse rate limit and which passes, during a predetermined time period, only those input pulses contributing to exceed the preselected low limit pulse rate providing said input pulse rate does not exceed the preselected high limit.

3,737,790

NOISE-RIDING SLICER

Bruce J. Brown, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 21, 1971, Ser. No. 210,455
Int. Cl. H03k *5/08*
U.S. Cl. 328—165 **7 Claims**



A noise-slicing device for substantially eliminating the noise from an input signal consisting of signal pulses riding in a background of noise. The input signal is fed to one terminal of a voltage comparator the output of which is the output of the device. The other input to the comparator is a reference voltage which is the output of a feedback loop. The feedback loop comprises another voltage comparator, a one-shot multivibrator, a summer and an integrator. The inputs to the integrator are the input signal to the device and a proportion of the output of the integrator, which constitutes the feedback signal.

3,737,791

CONTROL DEVICE FOR FILTER CIRCUITS CONNECTED IN PARALLEL WITH EACH OTHER AND TUNED TO DIFFERENT RESONANCE FREQUENCIES

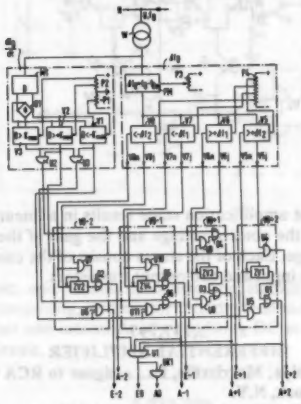
Michael Becker, Uttenreuth, Germany, assignor to Siemens Aktiengeselischaft, Munich, Germany

Filed May 18, 1972, Ser. No. 254,405

Claims priority, application Germany, June 1, 1971, P 21 27 108.9

Int. Cl. H03h 7/10

U.S. Cl. 328—167 5 Claims



A control device for filter circuits connected in parallel with each other and tuned to different resonance frequencies is disclosed. To prevent the occurrence of parallel resonances in the filter circuits connected to an electrical system in the event of sudden load changes or faults in the system, the control device switches the reactive member of these filter circuits in steps to retune the same in accordance with changes in the fundamental frequency of the system. The switching takes place upon reaching predetermined values of frequency deviation and frequency rate of change.

3,737,792

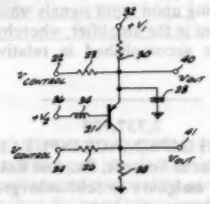
PHASE LOCKED FREQUENCY MODULATION DEMODULATOR CIRCUIT INCLUDING COLPITTS TRANSISTOR AND FEEDBACK TRANSISTOR

O. D. Parham, Downey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 855,007, Sept. 3, 1969, Pat. No. 3,611,195. This application Feb. 16, 1971, Ser. No. 119,408

Int. Cl. H03d 3/24

U.S. Cl. 329—103 11 Claims



A phase locked frequency modulation demodulator circuit is disclosed including a transistor connected in a Colpitts configuration. An effective tank circuit capacitance is varied in accordance with an error signal indicative of the frequency difference between a frequency modulated input signal and a signal at the instantaneous oscillation frequency of the circuit to vary the instantaneous oscillation frequency accordingly, causing the circuit to phase lock onto the carrier frequency of the input signal and to produce an amplitude varying signal indicative of the frequency modulation on the input signal.

3,737,793

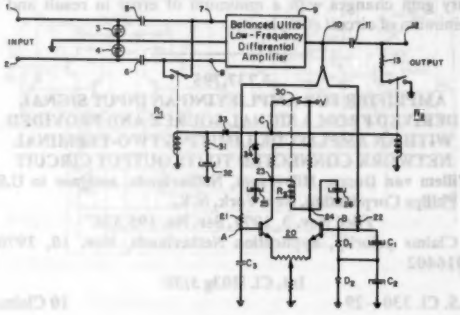
DC LEVEL RESTORING CIRCUIT

Roman Buch, Chicago, and Louis L. Kocsis, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed July 1, 1968, Ser. No. 741,462

Int. Cl. H03f 21/00

U.S. Cl. 330—11 4 Claims



There is described a DC level restoring circuit for an AC coupled, ultra-low frequency differential amplifier of the type used in conjunction with an electrocardioscope. A sensing circuit, in the form of a balanced differential amplifier is used to determine the presence of transient pulses at the output of the ECG amplifier and actuate two switches, one at the input AC coupling device and one at the output AC coupling device, to restore the AC coupling devices to their respective operating DC signal levels.

3,737,794

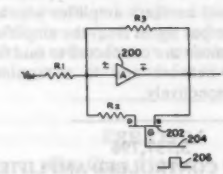
VARIABLE GAIN AMPLIFIER SYSTEM

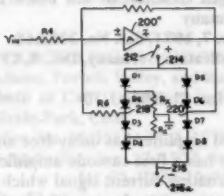
Rainer Kurz, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Division of Ser. No. 819,911, April 28, 1969, Pat. No. 3,646,586. This application Feb. 23, 1971, Ser. No. 117,952

Int. Cl. H03f 1/02

U.S. Cl. 330—9 6 Claims





A serial-parallel analogue-to-digital converter system utilizes a conventional ADC having a relatively low number of

channels together with at least one amplifier which may be set at different amplification factors, a conventional digital-to-analogue converter, and an arithmetic device that generates the digital output, to provide a fast conversion and an output having a substantially greater number of channels and a correspondingly high resolution. The conventional ADC is utilized several successive times at increasingly higher sensitivity through the use of the amplifier which may have its gain increased and its zero offset changed with each succeeding use of the ADC. Various means are described which may be employed for reducing or eliminating any errors which could be generated in the operation of this system. Additionally, particular circuit configurations are described which may be advantageously employed in the system for effecting the necessary gain changes with a minimum of error in result and a minimum of circuit complexity.

3,737,795

AMPLIFIER FOR AMPLIFYING AN INPUT SIGNAL DERIVED FROM A SIGNAL SOURCE AND PROVIDED WITH AN AMPLITUDE-LIMITING TWO-TERMINAL NETWORK CONNECTED TO ITS OUTPUT CIRCUIT

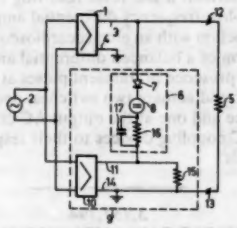
Willem van Doorn, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,336

Claims priority, application Netherlands, Nov. 10, 1970, 7016402

Int. Cl. H03g 3/30

U.S. Cl. 330—29 **10 Claims**



The invention relates to a limiter for limiting the output signal from an amplifier, for example, a video amplifier, which limiter is provided with an amplitude-limiting two-terminal network and an auxiliary amplifier, a first terminal of the two-terminal network being connected to the signal output lead of the amplifier and a second terminal being connected to an auxiliary signal output lead of the auxiliary amplifier, a signal being derived from said auxiliary amplifier which is in phase opposition with the output signal from the amplifier. The output terminals of the limiter are connected to said first terminal of the two-terminal network and to a terminal of fixed reference potential respectively.

3,737,796

LINEARLY CONTROLLED AMPLIFIER

Ernst Legler, 6101 Seeheim, Germany, assignor to Robert Bosch Fernsehanlagen Gesellschaft mit beschrankter Haftung, Stuttgart, Germany

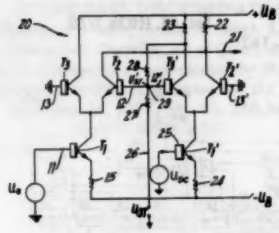
Filed Dec. 7, 1971, Ser. No. 205,668

Claims priority, application Germany, Dec. 8, 1970, P 20 60 192.7

Int. Cl. H03g 3/30

U.S. Cl. 330—29 **9 Claims**

A linearly controlled amplifier has delay-free amplification control. The amplifier has a first cascode amplification stage for amplifying an alternating current signal which has a non-linear gain control characteristic for amplifying the signal. A control voltage is supplied to the first amplification stage for controlling the gain of the latter. A second cascode amplification stage is connected to the control means for distorting the control signal applied to the first amplification stage. The second amplification stage comprises a DC amplifier and is provided with negative feedback for distorting the control voltage. The application of the thus predistorted control voltage to the first amplification stage results in a linear relationship between the control voltage and the gain of the first amplification stage. Each of the stages consist of the cascode amplifier has one input and two output transistors.



3,737,797

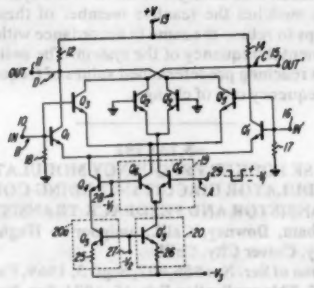
DIFFERENTIAL AMPLIFIER

Hiroshi Amemiya, Morrisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1971, Ser. No. 128,473

Int. Cl. H03f 3/30

U.S. Cl. 330—30 D **8 Claims**



Differential amplifier circuits which can be selectively inhibited from operating upon input signals while maintaining a d.c. operating current in the amplifier, whereby recovery from overloading can be accomplished in relatively short time periods.

3,737,798

VERY HIGH IMPEDANCE INPUT CIRCUIT

Claude Faraguet, Clarks Summit, Pa., and Roland Vaillier, 92 Meudon, France, assignors to Schlumberger Instrument et Systemes, Paris, France

Filed Mar. 19, 1971, Ser. No. 126,094

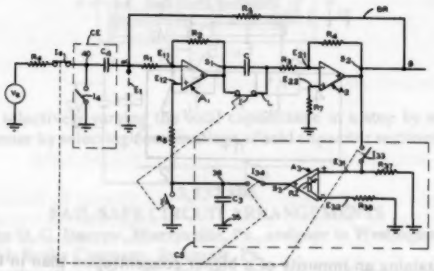
Claims priority, application France, Mar. 20, 1970, 7010091

Int. Cl. H03f 3/68

U.S. Cl. 330—85 **5 Claims**

Disclosed circuit includes two series-connected operational amplifiers A_1 and A_2 inverter connected with resistive nega-

tive feedback so that their inputs are substantially and at least virtually grounded; a feedback loop including a resistor coupled between the output and input terminals of the series of operational amplifiers for increasing the input impedance of



the circuit; and means of controlling stability and of correction comprising, a capacitor C in the feedback loop circuit, and at least one intermittently-operating DC error signal correction circuit.

3,737,799

CIRCUIT ARRANGEMENT FOR ATTENUATING A BROADBAND BACKGROUND NOISE LEVEL AND INTERFERING SIGNALS SUPERIMPOSED THEREUPON

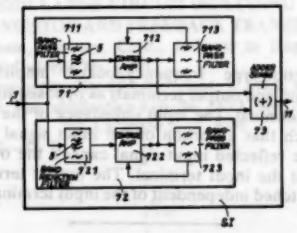
Jurgen Stander, D-28 Bremen, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Dec. 2, 1971, Ser. No. 204,248

Claims priority, application Germany, Dec. 3, 1970, P 20 59 507.7

Int. Cl. H03f 3/68

U.S. Cl. 330—126 **4 Claims**



A circuit for attenuating broadband background noise signals and narrower band interfering signals for facilitating detection of simultaneously appearing useful signals having a shorter duration than the interfering signals, the circuit including two channels for respectively attenuating signals in the narrower band and outside the narrower band but with a broader band, with an operational amplifier connected in at least one channel and controlled to have a constant output with respect to signals of longer duration than the useful signals, the amplifier output providing the desired circuit output signal.

3,737,800

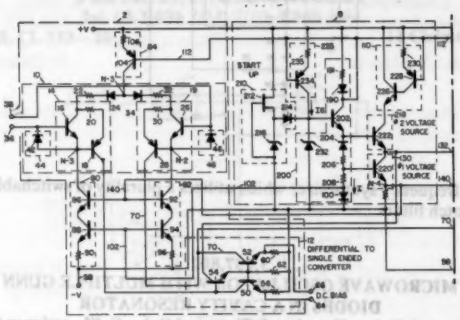
HIGH VOLTAGE OPERATIONAL AMPLIFIER

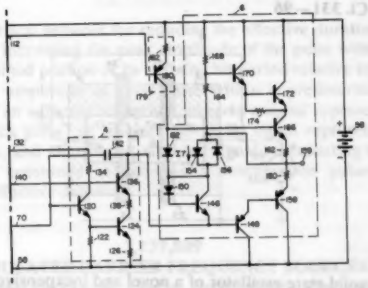
Ronald W. Russell, Mesa, and James E. Solomon, Scottsdale, both of Ariz., assignors to Motorla, Inc., Franklin, Ill.

Filed June 15, 1970, Ser. No. 46,253

Int. Cl. H03f 21/00

U.S. Cl. 330—207 P **2 Claims**





A monolithic operational amplifier is disclosed suitable for high voltage operation including an input transistor protection capability under large signal swing and a negative short circuit limit function. Another feature includes an internal current regulator and a protection circuit for circuit turn on.

ERRATUM

For Class 331—111 see:
Patent No. 3,737,731

3,737,801

LOSS CANCELLING RESONATOR AND FILTERS

David K. Adams, Portola Valley, and Raymond Y.-C. Ho, Sunnyvale, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

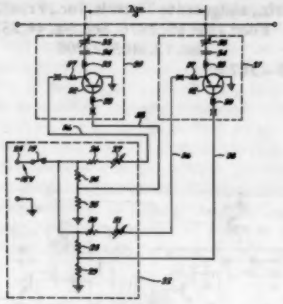
Division of Ser. No. 60,381, Aug. 3, 1970, Pat. No. 3,680,011. This application Jan. 17, 1972, Ser. No. 218,386

Int. Cl. H03b 19/00

U.S. Cl. 331—53 **1 Claim**

A loss cancelling resonator is disclosed which comprises a passive LC circuit coupled to a transistor in the inverted-common-collector configuration. Typical notch filter configura-

tions are also disclosed including notch filters with more than one resonator. Switchable notch filters are disclosed as well as



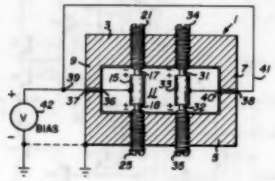
a frequency synthesizer which utilizes a plurality of switchable notch filters.

3,737,802

MICROWAVE OSCILLATOR WITH MULTIPLE GUNN DIODES IN A CAVITY RESONATOR

Kenneth Nobuo Kawakami, Thousand Oaks, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed Nov. 12, 1971, Ser. No. 198,287
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **23 Claims**



A solid state oscillator of a novel and inexpensive construction incorporates a plurality of microwave energy generating diodes, suitably Gunn diodes, for providing output powers in excess of that obtainable from a single diode. More particularly, the oscillator includes a rectangular waveguide type transmission line with a short circuit termination at one end. One or more pairs of diodes are located within the hollow of the waveguide; each diode of a given pair is geometrically arranged to be coupled between opposite ends of a cylindrical metal post and a respective top wall and bottom wall of the waveguide. A bias source is applied to the diodes by connection through a side wall to the metal post and to the waveguide. Microwave energy output coupling means, such as a waveguide, is connected to the open end of the waveguide.

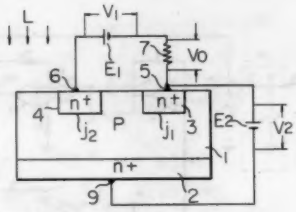
3,737,803

CONTROL SYSTEM FOR ELECTRIC CIRCUIT UTILIZING PHOTOSENSITIVE SOLID OSCILLATOR

Kiyoshi Kojima, and Toshiro Abe, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 889,236, Dec. 30, 1969, Pat. No. 3,665,340. This application Feb. 3, 1972, Ser. No. 223,121
Claims priority, application Japan, Jan. 5, 1969, 44/1264; Feb. 14, 1969, 44/11180; Mar. 31, 1969, 44/25113; Apr. 24, 1969, 44/32102; Apr. 30, 1969, 44/33831
Int. Cl. H03b 7/06
U.S. Cl. 331—107 R **7 Claims**

Control system for electric circuits utilizing a photosensitive solid oscillator which comprises an impurity layer formed on a surface of a semi-conductor wafer, two separate impurity layers formed on the other surface of said wafer as spaced from each other, and electrodes respectively provided at least on each of the latter two impurity layers, the respective impurity layers on both surfaces of the wafer being of a reversely conducting type semiconductor with respect to said wafer and



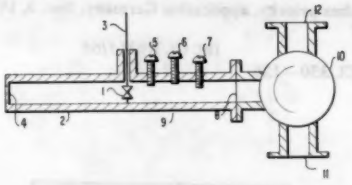
containing an impurity of a higher concentration than in the wafer. Source voltage to said electric circuit is supplied through the photosensitive solid oscillator, and the operation of the circuit is controlled by a pulse type oscillation output of the oscillator having an oscillating frequency which varies depending on variations in light amount or source voltage.

3,737,804

INJECTION-TYPE FREQUENCY-LOCKED AMPLIFIER

Kazuo Sakamoto, and Ryoji Tamura, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,758
Claims priority, application Japan, June 15, 1971, 46/42771
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R **12 Claims**



An injection-type frequency-locked amplifier having separate input and output terminals as opposed to a single input/output terminal. The input impedance of the amplifier is selected such that a portion of the input signal is reflected whereby the reflected input signal cancels the output signal appearing at the input terminal. The output terminal is impedance matched independent of the input terminal.

3,737,805

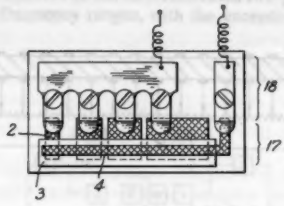
CRYSTAL OSCILLATOR WITH STEPPED VARIABLE CAPACITOR

Tadayoshi Shimodaira, Shig and Okito Naito, Suwa, both of Japan, assignors to Kabushiki Kaisha Suva Seikosha, Tokyo, Japan

Continuation of Ser. No. 862,819, Oct. 1, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,251
Claims priority, application Japan, Oct. 2, 1968, 43/71343
Int. Cl. H01g 5/24; H03b 5/36
U.S. Cl. 331—116 R **9 Claims**

A miniature variable condenser for and coupled to a quartz crystal vibrator including sandwich type evaporated capacitor

sections of a plurality of capacitance, means being provided for selectively varying the total capacitance in a step by step manner by selecting combinations of said capacitor sections.



3,737,806

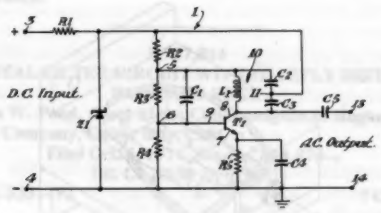
FAIL-SAFE CIRCUIT ARRANGEMENTS

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Continuation of Ser. No. 706,914, Feb. 20, 1968, abandoned. This application Jan. 12, 1970, Ser. No. 1,970

Int. Cl. H03b 5/12

U.S. Cl. 331—117 R **1 Claim**



A fail-safe level detector comprising a regenerative feedback oscillator and a voltage breakdown device interconnecting the output and common electrodes of the oscillator so that sufficient feedback for sustaining oscillations only occurs when a D.C. input causes the breakdown device to conduct and to assume its low dynamic impedance condition.

3,737,807

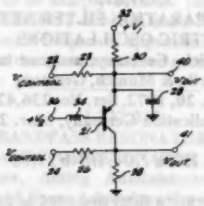
PHASE MODULATOR CIRCUIT INCLUDING COLPITTS TRANSISTOR AND FEEDBACK TRANSISTOR

O. D. Parham, Downey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 855,007, Sept. 3, 1969, Pat. No. 3,611,195. This application Feb. 26, 1971, Ser. No. 119,409

Int. Cl. H03c 3/22, 3/08

U.S. Cl. 332—16 T **9 Claims**



A phase modulator circuit is disclosed including a transistor connected in a Colpitts configuration. An effective tank circuit capacitance is varied in accordance with an error signal indicative of the instantaneous phase difference between a carrier frequency input signal and a signal at the instantaneous oscillation frequency of the circuit. The instantaneous oscillation frequency of the circuit is varied in response to an amplitude varying input signal, thereby phase modulating the carrier frequency signal in accordance with the amplitude varying input signal.

3,737,808

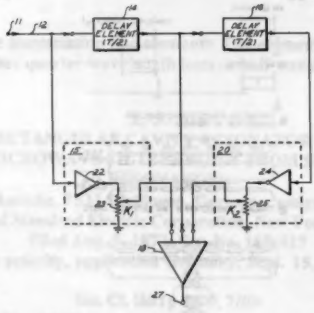
PULSE SHAPING NETWORK

Keshava Srivastava, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 29, 1971, Ser. No. 214,501

Int. Cl. H03h 7/28, 7/30; H04b 3/04

U.S. Cl. 333—20 **11 Claims**



An electrical network for reducing the effective duration of a pulse by increasing the peak amplitude of the pulse within a predetermined portion of its defining bit period relative to the maximum amplitude of such pulse within a predetermined portion of an adjacent bit period, wherein a signal representation of such pulse, an inverter advanced signal representing such pulse, and an inverted retarded signal representing such pulse are combined to generate a combination pulses of reduced effective duration.

3,737,809

MODULATED CARRIER FREQUENCY SOURCES

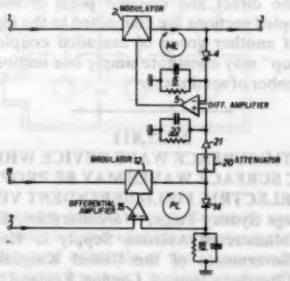
John Michael Parkyn, St. Albans, Hertfordshire, England, assignor to Marconi Instruments Limited, London, England

Filed Sept. 8, 1971, Ser. No. 178,639

Claims priority, application Great Britain, Sept. 23, 1970, 45,321/70

Int. Cl. H03c 1/06

U.S. Cl. 332—31 R **8 Claims**



An amplitude modulated carrier frequency source has a first modulator and a first differential amplifier in a feedback loop of the first modulator, and a second modulator and a second differential amplifier in a feedback loop of the second modulator. A high level carrier frequency is applied to the second modulator and a further input of the second dif-

ferential amplifier is derived from the modulating frequency. Another carrier frequency is applied to the first modulator whose associated differential amplifier has, as a further input, stabilizing output from the second modulator. A reference is thus achieved for modulation and carrier level that is a modulated carrier.

3,737,810

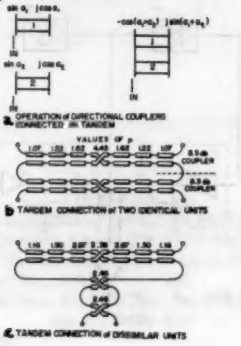
WIDEBAND TEM COMPONENTS

John Paul Shelton, McLean, Va., assignor to Radiation Systems Incorporated, McLean, Va.

Continuation-in-part of Ser. No. 485,723, Sept. 8, 1965, abandoned. This application May 5, 1969, Ser. No. 821,612

Int. Cl. H03h 7/30; H01p 3/08, 5/14

U.S. Cl. 333—10 **15 Claims**


a OPERATION of DIRECTIONAL COUPLERS CONNECTED IN TANDEM
VALUES OF p
1.07 1.33 1.63 4.43 1.66 1.22 1.07
0.5 ΦL COUPLER
0.5 ΦL COUPLER
b TANDEM CONNECTION of TWO IDENTICAL UNITS
1.10 1.30 2.07 2.38 2.07 1.30 1.10
2.45
2.45
c TANDEM CONNECTION of DISSIMILAR UNITS

A prior art microwave component for multi-octave operation includes a plurality of sections of coupled TEM transmission lines interconnected in cascade to form a single composite four-port network in which the coupled sections have progressively tighter coupling coefficients. As the number of sections of the composite network increases, or as the bandwidth requirements of the network increase, the separation between adjacent transmission lines becomes progressively smaller unit a point is attained at which the coupling coefficient cannot be realized using conventional manufacturing processes.

The disclosed invention provides a technique by which coupling coefficients that have heretofore been unrealizable in practice can be achieved for coupled sections requiring such coupling coefficients, by interconnecting one or more additional groups of cascaded coupled sections in tandem with the original cascade configuration.

In a cascade interconnection, the direct and isolated ports of one couple are connected to the input and coupled ports of the next succeeding seciton. In contrast, in the tandem interconnection the direct and coupled ports of one group of cascaded coupled sections are connected to the input and isolated ports of another group of cascaded coupled sections, where a "group" may constitute simply one section, as well as any larger number of sections.

3,737,811

ACOUSTIC SURFACE WAVE DEVICE WHEREIN ACOUSTIC SURFACE WAVES MAY BE PROPAGATED WITH AN ELECTRIC FIELD DEPENDENT VELOCITY

Edward George Sydney Paige, Worcestershire, England, assignor to Minister of Aviation Supply in Her Britannic Majesy's Government of the United Kingdon of Great Britain and Northern Ireland, London, England

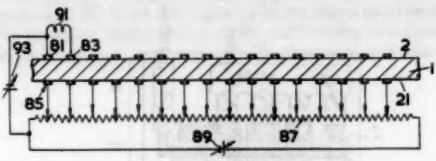
Filed Feb. 8, 1971, Ser. No. 113,587

Claims priority, application Great Britain, Feb. 13, 1970, 6,972/70

Int. Cl. H03h 9/30; H03f 13/00; H01v 7/02

U.S. Cl. 333—30 R **11 Claims**

An acoustic wave device relies on its effectiveness not on the piezoelectric effect but on the elastic stiffness effect and the electro-elastic stiffness effect whereby the effectiveness of



the device is electric field dependent.

3,737,812

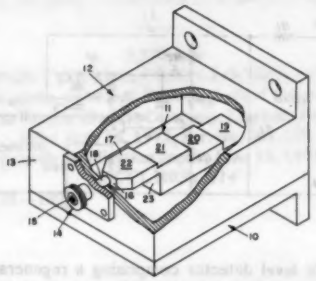
BROADBAND WAVEGUIDE TO COAXIAL LINE TRANSITION

Joseph G. Gaudio, Jefferson Station, and Thomas R. Debski, 23 Rose St., Bethpage, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1972, Ser. No. 287,320

Int. Cl. H03H 7/30

U.S. Cl. 333—32 **6 Claims**



Transition apparatus for interconnecting a waveguide to a coaxial line comprising a first subassembly which forms the top, both side and end closing walls of a rectangular waveguide section and a second subassembly which provides the bottom wall thereof and has an impedance transforming section integrally formed therewith. This transforming section is in the form of a staircase and the first and top step thereof has an overhanging tab which confronts the end closing wall of the waveguide section. The center conductor of a coaxial connector attached to this end wall contacts the end face of the tab, and these elements together with the back of the staircase and an adjacent portion of the bottom wall define a magnetic field coupling loop.

3,737,813

TRANSMISSION SEPARATION FILTER NETWORK FOR ELECTRIC OSCILLATIONS

Erwin Buecherl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 20, 1972, Ser. No. 236,423

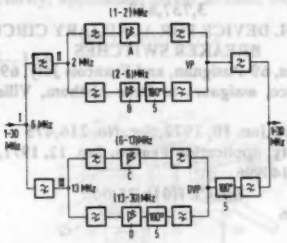
Claims priority, application Germany, Mar. 22, 1971, P 21 13 761.1

Int. Cl. H03h 7/04; H04b 31/00

U.S. Cl. 333—70 R **5 Claims**

A transmission separation filter designed as an all pass filter network which comprises two equal frequency filters whose partial filters have reciprocal characteristic functions and are symmetrically connected with respect to the input and output of the transmission separation filter. Two-port circuits are connected between respectively equal partial filters and may be embodied as transformers, reactance networks, distortion

correctors or amplifiers, and are dimensioned such that the electrical properties of the entire network coincide with the electrical properties of the interconnected two-port circuits in the partial frequency ranges, with the exception of an additional phase. The partial filters have uneven characteristic functions and a 180° phase shifter is provided in one filter branch and the two-port circuit of the same branch is the dual of the respective two-port circuit interconnected in the other filter branch.

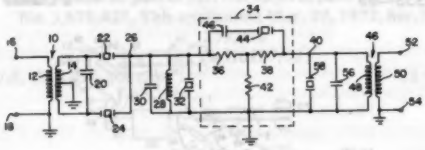


3,737,814

CRYSTAL FILTER CIRCUIT WITH SHARPLY DEFINED PASSBAND EDGE

Charles W. Pond, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 6, 1971, Ser. No. 186,873
Int. Cl. H03h *7/10, 9/00*
U.S. Cl. 333—72 **7 Claims**



A crystal filter is disclosed wherein compensation for passband edge rounding due to inherent crystal resistance is afforded using an attenuation equalizer arrangement providing an impedance which caries as a function of frequency such that its magnitude is of a minimum value in the vicinity of the passband edge to be sharply defined. The attenuation equalizer includes a resistive T-network and a crystal resonator having a series resonant frequency approximately equal to the cutoff frequency at the aforementioned passband edge.

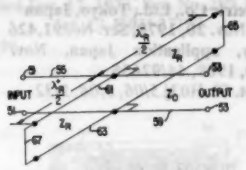
3,737,815

HIGH-Q BANDPASS RESONATORS UTILIZING BANDSTOP RESONATOR PAIRS

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Herman C. Okean, Huntington, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,329
Int. Cl. H01p *3/04, 3/08;* H03h *7/08*
U.S. Cl. 333—73 R **2 Claims**

This disclosure describes high-Q bandpass resonators utilizing composite bandstop resonator pairs. The bandstop resonator pairs are formed of composite series or parallel connected realizable transmission line elements. The elements are exclusively either quarter-wavelength lines or half-wavelength lines.

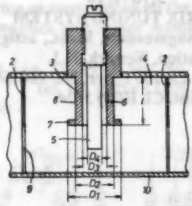


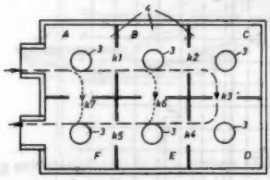
3,737,816

RECTANGULAR CAVITY RESONATOR AND MICROWAVE FILTERS BUILT FROM SUCH RESONATORS

Helmut Honicke, 7531 Dietlingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,417
Claims priority, application Germany, Sept. 15, 1970, P 20 45 560.1
Int. Cl. H01p *1/20, 7/06*
U.S. Cl. 333—73 W **6 Claims**





A tunable capacity-loaded rectangular cavity resonator having an inner conductor and a tuning plunger capacitively coupled to and disposed coaxially of the inner conductor is disclosed. The resonant frequency and impedance of the resonator are essentially determined by the inner conductor dimensions. A plurality of these resonators forming a microwave filter are coupled together by means of inductive diaphragms. The slope of the coupling admittance in the tuning range can be chosen by height and width variations of the aperture in the diaphragm with respect to the length of the tuning plunger. Coupling apertures can be provided in all four sides.

3,737,817

PUSH-BUTTON OPERATED TUNER

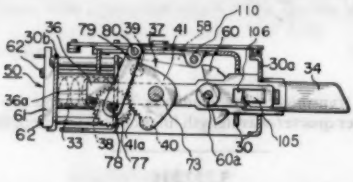
Takashi Ashida; Teigi Sasagawa; Masaru Fukabori, all of Akashi; Shinobu Karino, and Sadao Motoki, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken and Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,426

Claims priority, application Japan, Nov. 20, 1969, 44/92654; Nov. 20, 1969, 44/92655

Int. Cl. H03j *5/06, 5/08, 5/32*

U.S. Cl. 334—7 **3 Claims**



A push button operated tuner is provided with a plurality of mu-tuner elements arranged parallel to each other in a common plane and a plurality of axially movable cores arranged for simultaneous movement into and out of the mu-tuner elements. A manually rotatable adjustor is provided for adjusting the core elements relative to the push button stems and an operator segment on each stem may be angularly adjusted relative to the stem to vary the movement of the cores into the mu-tuner elements upon movement of a push button. The push button stems are arranged in an alternating manner with the mu-tuner elements in a common plane to reduce the vertical height of the unit.

3,737,818

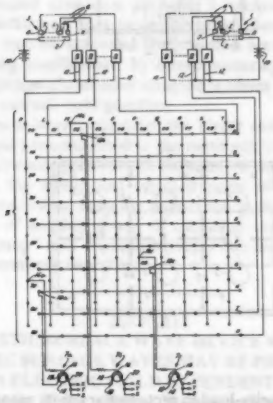
MATRIX TUNING SYSTEM

Abraham H. Jacob, Longmeadow, Mass., assignor to General Instruments Corporation, Newark, N.J.

Filed July 23, 1971, Ser. No. 165,609

Int. Cl. H03j *5/04*

U.S. Cl. 334—11 **20 Claims**



A standardized tuning structure is disclosed which is capable of being digitally tuned to correspond to selected communication channels, the standardized construction being adaptable for use in connection with whatever communication channels, in whatever band range, may be present in a given locality. Thus while there may be some eighty or more available channels, with only a small number of them available in a given locality, the standardized matrix-type tuning system can be used in any locality simply by making appropriate electrical connections to a terminal board. All-electrical circuitry is provided to effect the desired tuning and band selection, that circuitry including a novel pulse-producing circuit specially adapted to cooperate with touch-type switches, and also including flip-flop circuits and AND-gates for controlling band and channel selection and appropriate tuning within the communication receiver.

3,737,819

CONTROL DEVICE FOR AUXILIARY CIRCUIT BREAKER SWITCHES

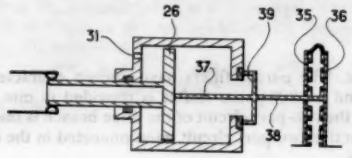
Edmond Thuries, 69-Pusignan, and Francois Joly, 69-Lyon 6e, both of France, assignors to Delle-Alsthom, Villeurbanne, France

Filed Jan. 10, 1972, Ser. No. 216,475

Claims priority, application France, Jan. 12, 1971, 7100789, Nov. 16, 1971, 7140996

Int. Cl. H01h *75/00*

U.S. Cl. 335—16 **8 Claims**



Control for auxiliary switches on circuit breakers wherein the control is placed so that it will be dependent on the detection of an appreciable current in a conductor of the circuit of an auxiliary switch of the circuit breaker.

3,737,820

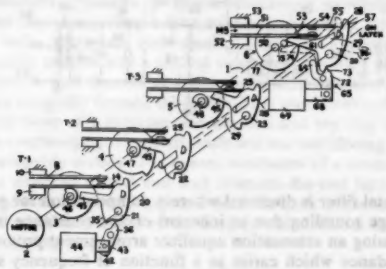
CONDITION CONTROL DEVICE AND SYSTEM

John L. Harris, Clearwater, Fla., assignor to Deltrol Corp., Bellwood, Ill.

Division of Ser. No. 133,236, April 12, 1971. This application Aug. 24, 1972, Ser. No. 283,546

Int. Cl. H01h *7/14*

U.S. Cl. 335—65 **2 Claims**

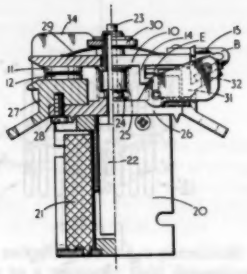


A timing device controls a group of electric heaters, turning them on in sequence in response to call for heat by a thermostat and turning them off in sequence when the call for heat is satisfied. The timer has two stopping points, one with the heaters off and the other with the heaters on. A single switch controls the timer motor and is opened by a timer cam at the off and on positions. The switch is held open at the off position by an off latch and at the on position by an on latch. These latches are released by a solenoid controlled by the room thermostat. The latches are also controlled by a timer cam, the off latch being held released when the timer is in the on position, and the on latch being held out at the off position. The load switches for the heaters are also opened instantly by a second solenoid responding to an unfavorable condition. This same action releases the on latch to cause the timer to return to the off position.

3,737,821
ELECTRICAL CONTACTORS

John Morton, Hazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Romiley, Stockport, England

Filed Sept. 24, 1971, Ser. No. 183,489
Claims priority, application Great Britain, Sept. 25, 1970, 45,709/70
Int. Cl. H01h 1/12
U.S. Cl. 335—133 9 Claims

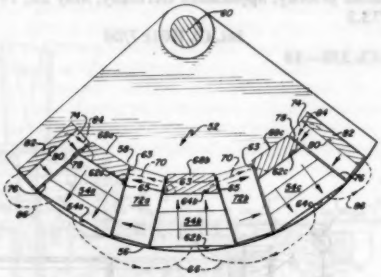


A solenoid operated contactor is disclosed which provides a larger than armature travel air gap, higher contact pressures and rolling or wiping action of the main contacts, by providing a conductive strap supporting the main moving contact, which strap is coupled intermediate its ends to the solenoid armature and has alternative fulcra, one nearer and one more distant from the armature-strap junction.

3,737,822
MAGNETIC SEPARATOR

Harold W. Buus, Hales Corners, and Donald G. Morgan, Milwaukee, both of Wis., assignors to Magnetics International, Inc., Maple Heights, Ohio

Continuation-in-part of Ser. No. 45,095, June 10, 1970, Pat. No. 3,678,427. This application Mar. 29, 1972, Ser. No. 239,098
Int. Cl. H01f 7/02
U.S. Cl. 335—304 12 Claims

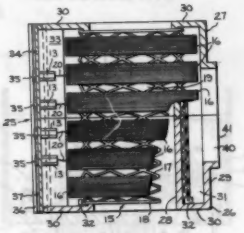


A magnet assembly for use such as in a magnetic separator having main magnetic elements with aiding magnetic elements disposed therebetween and having their polarities directed transversely thereto such that increased lines of magnetic flux, increased effective pole area, decreased gap length, improved repulsion of flux leakage both at the edges of the main magnetic elements and between the sides of adjacent main magnetic elements, and reduced flux leakage at the rear face of the main magnetic elements is achieved.

3,737,823
INTEGRAL ELECTRICAL COIL STRUCTURE

Robert D. Mees, Fort Wayne, Ind., and George I. Duncan, Danville, Ill., assignors to General Electric Company, Ft. Wayne, Ind.

Filed Dec. 17, 1971, Ser. No. 209,193
Int. Cl. H01f 27/30
U.S. Cl. 336—96 13 Claims

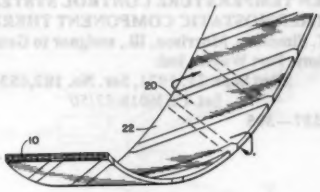


An integral, cast electric coil structure includes an open mesh supporting spool with at least one coil of electrical conductor supported on the spool and an encapsulant substantially encasing the spool and the coil. Portions of the encapsulant are both inside and outside of the spool and extend through openings in the spool to form an integral structure.

3,737,824
TWISTED MULTIFILAMENT SUPERCONDUCTOR

Willard D. Coles, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 280,031
Int. Cl. H01v 11/06
U.S. Cl. 336—200 10 Claims



Masking selected portions of a ribbon and forming an intermetallic compounds on the unmasked portions by a controlled diffusion reaction produces a twisted filamentary structure. The masking material prohibits the formation of superconductive material on predetermined areas of the substrate.

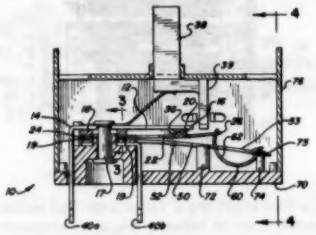
3,737,825
OVERLOAD CIRCUIT BREAKER

Richard D. Summe, 5302 East 72nd Place, Indianapolis, Ind., and Everett H Vannoy, 500 Hillsdale Court, Kokomo, Ind.

Filed July 13, 1972, Ser. No. 271,603
Int. Cl. H01h 61/00
U.S. Cl. 337—91 11 Claims

An overload circuit breaker utilizes a stationary member having a first contact element located on its surface and a

movable resilient member having a sacrificial contact element located on its surface. A resilient bimetallic member is operable as a toggle to control the movable member. An electrical terminals means is connected such that an electrical circuit is formed through the first and second contact elements as well as through the resilient bimetallic member and the movable resilient member. The resilient bimetallic member and movable resilient member move with a snap-action from the first stable position to the second stable position upon a flow of a predetermined electrical current through the electrical circuit, thereby opening the first contact element and the sacrificial contact element and breaking the electrical circuit. A reset element actuable from a first position to a second position is provided to move the first resilient bimetallic member from the second stable position and back to the first stable position. The reset element is adapted such that the first contact element and the sacrificial contact element do not close until the reset element returns to its first position. In some embodiments, an ambient temperature compensating element is also provided for the overload circuit breaker.



3,737,826

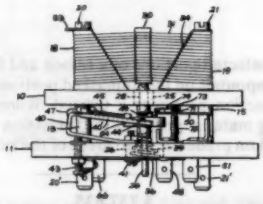
OVEN TEMPERATURE CONTROL SYSTEM AND THERMOSTATIC COMPONENT THEREOF

Russell T. Simmons, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 21, 1971, Ser. No. 182,453

Int. Cl. H01h 37/50

U.S. Cl. 337—395 **22 Claims**



A thermostat is described for sensing the temperature of a gaseous medium such as air and for actuating an electrical switch when the temperature reaches a predetermined value. The thermostat employs a thermally expandable wire mechanically coupled to a switch actuating plunger.

3,737,827

CREEP-COMPENSATING STRAIN GAGES

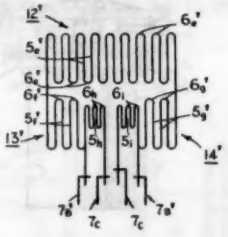
Jurgen Paetow, 61 Darmstadt, Germany, assignor to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany

Filed Oct. 12, 1971, Ser. No. 188,305

Claims priority, application Germany, Oct. 10, 1970, P 20 49 820.8

Int. Cl. G01l 1/22

U.S. Cl. 338—2 **12 Claims**



Creep effects exhibited by elastically deformable load sensing members equipped with foil-type resistive strain gages are counteracted by way of strain gage constructions in which a plurality of relatively short end-to-end grids, including a multiplicity of end tabs, develop compensatory inversely varying electrical output characteristics due to slippage.

3,737,828

RADIATION DETECTOR

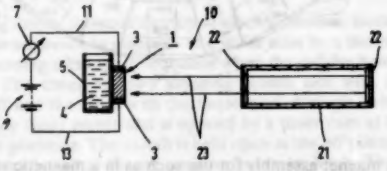
Kurt Fussgaenger; Johannes Rachmann, and Klaus Mettler, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 19, 1971, Ser. No. 144,756

Claims priority, application Germany, May 26, 1970, P 20 25 773.2

Int. Cl. H01c 7/08

U.S. Cl. 338—18 **4 Claims**

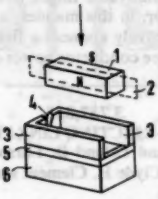


An electromagnetic radiation detector for successive high frequency short impulse radiations, as from a CO_2 laser having a 10.6 μm wave length. The detector device includes a uniform semiconductor material of gallium arsenide doped with Cu, Ge, Li, or Mn.

3,737,829
CONTACTLESS SWITCHING DEVICE

Hans Schneider, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 22, 1971, Ser. No. 200,770
Claims priority, application Germany, Nov. 23, 1970, G 70 43 185.5
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 8 Claims

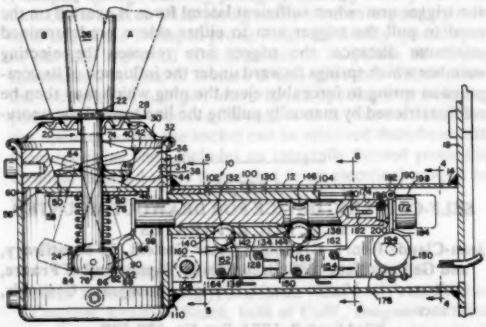


In a contactless switching device, a permanent magnet can be moved relative to a magnetic field dependent resistance positioned between return yoke parts. The longitudinal axis of the magnetic field dependent resistance is in the direction of the neutral zone of the permanent magnet. The return yoke parts face the poles of the permanent magnet over a large area. In order to remove the lines of force from the magnetic field dependent resistance, a part causing a magnetic short-circuit is inserted after the return yokes in the direction of movement of the permanent magnet. It is thereby possible to relieve the magnetic flux practically completely in the OFF position of the device with a relatively small distance of travel of the permanent magnet.

3,737,830
ONE HANDLE CONTROL FOR LOADERS

Wayne W. Lark, Clarendon Hills, and Marvin D. Jennings, Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 1, 1972, Ser. No. 222,495
Int. Cl. H01c 5/00
U.S. Cl. 338—128 11 Claims

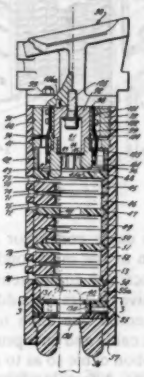


A lever fixed to a shaft having a system of grooves with spherical balls therein. Upon movement of the shaft in, out, or around, the balls open and close particular electrical circuits while activating implement movement by the creation of unbalance in other circuits.

3,737,831
RESISTOR ASSEMBLY WITH COMPRESSION PLATE SUPPORTS

Earl B. Rietz, La Canada; James R. McCloud, Burbank; Hubert J. Koenn, Alhambra, and David A. Wall, Pasadena, all of Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Division of Ser. No. 764,975, June 7, 1968, Pat. No. 3,560,905, which is a division of Ser. No. 439,304, March 12, 1965, Pat. No. 3,392,248. This application Oct. 12, 1970, Ser. No. 80,109
Int. Cl. H01c 1/16
U.S. Cl. 338—261 3 Claims

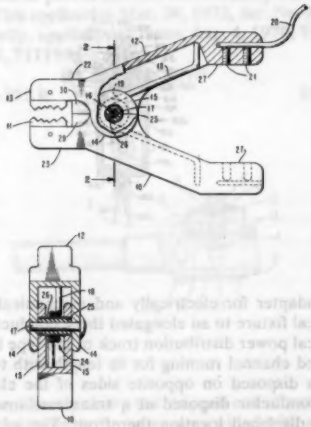


A non-inductive resistor for an oil circuit breaker is formed of pancake coils stacked atop one another and held compressed against one another by a central support rod.

3,737,832
ELECTRICAL CLAMP

Gordon S. Anderson, Daheim Road, Millbrook, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,765
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 6 Claims

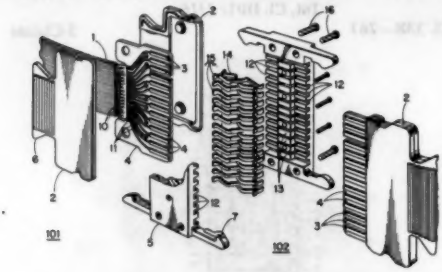


A standard form of cast alluminum ground clamp is disclosed wherein the connecting means provided at the pivot point has shock absorbing properties and is comprised of a resilient sleeve surrounding the interconnecting rivet.

3,737,833
RIBBON CABLE CONNECTOR SYSTEM HAVING FEED THRU CONNECTOR

Raymond Jerominek, Sherborn, Middlesex, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 12, 1971, Ser. No. 142,652
Int. Cl. H01r *13/54*, *13/58*; H05k *1/04*
U.S. Cl. 339—17 F 7 Claims

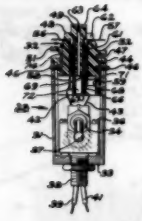


An improved ribbon cable connector system for accurate and reliable connection of flat multiconductor electrical ribbon cable to other electrical components or subsystems. A plurality of flat conductive fingers embedded in a non-conductive medium are connected one each to a wire of the flat multi-conductor ribbon cable and encapsulated in a protective case which grips the ribbon cable so as to minimize stresses on the electrical connections. A female edge type connector having a plurality of receptacles along two edges, is adapted to receive a plurality of flat conductive fingers and electrically reverse the position of the wires it connects.

3,737,834
ADAPTER FOR THREE CONDUCTOR ELECTRICAL POWER DISTRIBUTION TRACK

James Contratto, San Leandro, Calif., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,973
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R 9 Claims

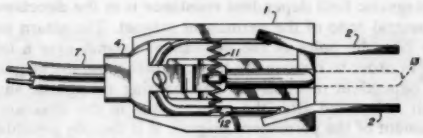


An adapter for electrically and mechanically securing an electrical fixture to an elongated three conductor, two circuit electrical power distribution track of the type having an open mouthed channel running for its length with two of the conductors disposed on opposite sides of the channel and the third conductor disposed at a transverse inwardly and upwardly displaced location therefrom. The adapter is of the type which has a cylindrical body adapted at one end for securance to an electrical light fixture and having a connecting head at its opposite end for securing the adapter to the channel upon insertion of the head into the channel and rotation through 90°. The head is provided with a pair of contact fingers in electrically conducting relation to an electrical lead-in arrangement for the fixture, which fingers are also arranged to engage either of two circuit pairs of the three conductors upon insertion and rotation of the head in the channel. The principal feature of the adapter is that one of the contact fingers is removably insertable into the head at two positions transversely and longitudinally displaced from each other and in each position the finger is in electrically conducting relation to the electrical lead-in arrangement for the fixture. In one position, the removable contact finger is engageable with one of the side conductors of the channel while the fixed finger is engageable with the opposite second side conductor. In the other position, the removable finger is engageable with the second side conductor. In this manner, a single adapter may be employed to selectively connect a fixture to either of the two circuits of the three conductor power distribution system.

3,737,835
SELF-EJECTING LINE PLUG

Clyde H. Clement, and Leland B. Larson, both of Phoenix, Ariz., assignors to Clyde H. Clement and Leland B. Larson, part interest to each

Filed July 21, 1971, Ser. No. 164,681
Int. Cl. H01r *13/50*, *13/62*
U.S. Cl. 339—45 R 2 Claims



A plug is provided for insertion into an ordinary wall outlet and contains a mechanism for effecting self-ejection when the line cord is pulled laterally with respect to the plug. A line cord is attached to the plug and supported on a trigger member disposed to pivot about a vertical axis within the plug. The trigger member is normally biased to a central position by means of laterally disposed, oppositely acting compression springs bearing against a forwardly directed trigger arm. An ejecting member is biased in a forward direction to assume a normal attitude parallel to the plug prongs and extending slightly forwardly beyond the ends thereof. When the prongs are inserted into the wall socket, the ejecting member is pushed rearwardly and is cocked beneath a catch portion of the trigger arm. when sufficient lateral force is exerted on the cord to pull the trigger arm to either side a predetermined minimum distance, the trigger arm releases the ejecting member which springs forward under the influence of its compression spring to forceably eject the plug which may then be safely retrieved by manually pulling the line toward the operator.

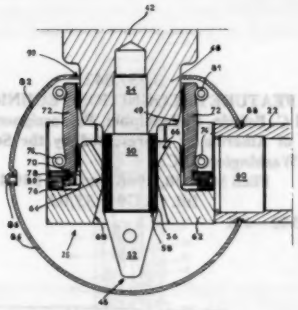
3,737,836
SELF-COUPLING DEVICE FOR DRAWOUT MOUNTED ELECTRIC APPARATUS

Jean-Claude Henry, Grenoble; Cesar Castelli, 38 Montfleury, and Georges Henry, 38 St. Martin-le-Vignoux, all of France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Sept. 8, 1971, Ser. No. 178,727
Claims priority, application France, Sept. 17, 1970, 7033848
Int. Cl. H01r *13/20*
U.S. Cl. 339—64 R 2 Claims

An electrically conducting and mechanically guiding self-coupling device for connecting and disconnecting a terminal member of a removable electric apparatus, such as a circuit interrupter, to and from a stationary terminal member of a

metal housing. The device comprises plug-in members for mechanical guiding and coaxial resilient contact means



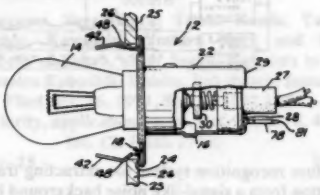
whereby the plug-in members position the terminal members in a manner preserving the contact means from mechanical stresses.

3,737,837

SNAP-IN TYPE LAMP BULB SOCKET

George B. Whitehead, Birmingham, Ala., assignor to Elmatic Corporation, Livonia, Mich.

Filed May 6, 1971, Ser. No. 140,681
Int. Cl. H01r *13/60*
U.S. Cl. 339—127 3 Claims



A lamp socket normally used on automotive vehicles which is snapped into an opening in a panel for mounting featuring T-shaped spring retaining prongs projecting axially from the shell of the socket. Each prong has two knees depending from each side of the T-shaped prong which are axially spaced apart to provide improved socket retention in panels of varying thicknesses. A lock-in feature is also provided which allows the socket to be snapped into a keyed opening in a mounting panel, but which requires the socket to be indexed relative to the opening before the socket can be removed therefrom. The lamp-receiving shell includes an integrally formed grounding terminal adapted to be connected to an electrical ground for conducting electric current away from the lamp.

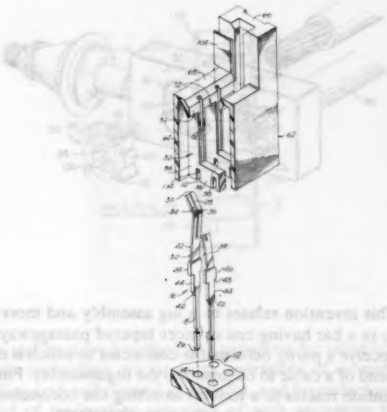
3,737,838

PRINTED CIRCUIT BOARD CONNECTOR

William Russell Mattingly, Jr., Santa Ana, and Peter Michael Gregson, Redondo Beach, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,470
Int. Cl. H05k *1/07*; H01r *13/64*
U.S. Cl. 339—186 M 3 Claims

A printed circuit board connector having a plurality of contacts mounted in the connector housing and the method of assembly thereof. The contacts are formed of a spring contact portion having a contacting surface and terminal portions interconnected by a central mounting portion. The contact is inserted on a mounting member in an unstressed condition with the contacting surface extending from the mounting member in one direction and the terminal portion extending from the mounting member in an opposite direction. A connector housing member contains a slot therethrough for positioning a



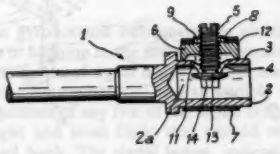
printed circuit board therein. The connector housing member is positioned on the mounting member. When positioned on the member, curved inner surfaces of the housing member cause the contacts to be spread apart, preloading the contacts at the tip. When the printed circuit board is inserted into the housing, the housing protects the tip member from direct contact by the printed circuit board.

3,737,839

CONNECTOR TERMINAL HAVING A CONTACT SOCKET ASSEMBLY FOR RECEIVING THE END OF A CONDUCTOR

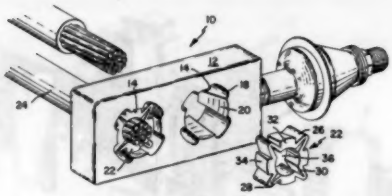
Gilles Adrien Georges Mareckal, 36 Quai de Bethune, 75 Paris 4, France

Continuation-in-part of Ser. No. 166,789, July 28, 1971, abandoned. This application Mar. 30, 1972, Ser. No. 239,714
Claims priority, application France, Aug. 4, 1970, 7028749; Mar. 30, 1971, 7111094
Int. Cl. H01r *11/10*
U.S. Cl. 339—272 R 13 Claims



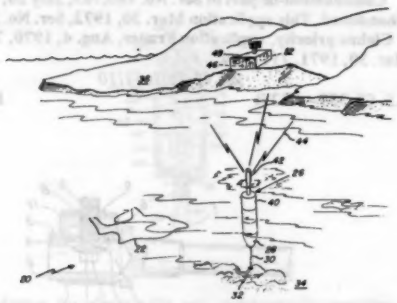
In order to resiliently clamp the stripped end of a conductor to a connector terminal, the latter is provided with a contact socket assembly in which the clamping setscrew is threadedly supported by a nut held on the socket casing by a resiliently deformable spring band. In the operative position of the contact socket assembly, the nut is spaced from the casing wall and the setscrew clamps down on the conductor end by virtue of the force exerted thereon by the deformed spring band.

3,737,840
LUG ASSEMBLY
Norman Edwin Hoffman, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 22, 1971, Ser. No. 200,963
Int. Cl. H01r 7/06
U.S. Cl. 339—273 F 2 Claims



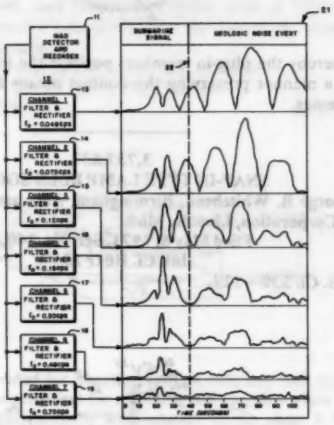
This invention relates to a lug assembly and more particularly to a bar having one or more tapered passageways therein to receive a partly deformable connector in which is emplaced the end of a cable to be joined to the lug assembly. Further this invention relates to a tool for inserting the connector into the bar as well as for removing the same therefrom.

3,737,841
DIRECTIONAL TRANSDUCER SYSTEM
David D. Edson, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.
Filed May 25, 1971, Ser. No. 146,705
Int. Cl. G01s 3/80, 9/68
U.S. Cl. 340—2 6 Claims



A directional transducer system adapted for generating signals indicative of the direction of a source of radiant energy submerged in a fluid medium. This system is particularly useful in sonar applications which contemplate the use of a multisectioned transducer with arithmetic means for combining the signals received by each of these transducer sections to provide a set of three signals, namely, a reference signal and two coordinate signals which are suitable for transmission via a telemetry link to a utilization device such as a display. Means are also disclosed for compressing the dynamic range of the signals to facilitate their transmission via a telemetry link as well as means for energizing a transducer with a signal having an average power independent of a variation in the supply voltage utilized in energizing the circuitry of the invention.

3,737,842
FEATURE RECOGNITION TECHNIQUES
Marshall C. Bobrin, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 30, 1966, Ser. No. 540,148
Int. Cl. G01r 33/02
U.S. Cl. 340—4 R 1 Claim

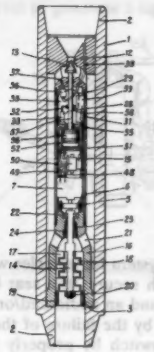


A feature recognition system for extracting transient signal information from a signal-like noise background by separating a time domain signal into a plurality of frequency-time domain signals by frequency selective filters. Each of the filtered outputs is converted to unidirectional signals and then displayed on a chart recorder from which the presence of a signal is determined on the basis of one or more of three criteria. The first criteria is maximum energy in a predetermined one of the selected frequencies; the second criteria is the time convergence of the time-tracings of peaks and troughs of the unidirectional signal lobes at the higher frequencies; and the third criteria is the difference in shape factors for signal information as opposed to noise information.

3,737,843
HYDRAULICALLY CONTROLLED DEVICE FOR MODULATING THE MUD
Jean-Pierre Le Peuvedic, Pau, and Claude Quichaud, Billere, both of France, assignors to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France
Filed Dec. 9, 1971, Ser. No. 206,367
Int. Cl. G01v 1/40
U.S. Cl. 340—18 NC 5 Claims

A hydraulically controlled device to transmit measurements taken at the bottom of a well to the surface, in the form of pressure modulations created by periodical restrictions on the passage of the drilling fluid, characterized by the use of a ser-

vovalve which operates the drilling fluid flow-restriction system, and the hydraulic control fluid of which is uniformly



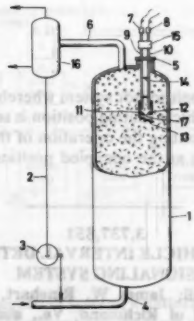
related, in quantity and direction, to the electric intensity passing through its coil.

3,737,844

METHOD FOR DETECTING SMALL PARTICLES IN A TANK AND AN APPARATUS FOR CARRYING OUT THE SAME

Tohru Yokoyama, Sagamihara; Tetsuo Kanda, Yokohama; Yudo Oshio, Kawasaki; Yoshiro Hori, and Kimihiko Yazawa, both of Tokyo, all of Japan, assignors to Chiyoda Kako Kensetsu Kabushiki Kaisha, Yokohama, Japan

Filed Oct. 26, 1971, Ser. No. 192,157
Claims priority, application Japan, Oct. 27, 1970, 45/93937
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **10 Claims**



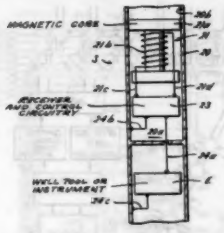
An ultra-sonic transmitting means and an ultra-sonic receiving means are provided in fluidized region of a tank at a fixed interval. An ultra-sonic wave is transmitted from the transmitting means to the receiving means and bubbles are prevented from entering the space between the transmitting means and the receiving means, and the presence or absence of small particles is detected by measuring the attenuation of the ultra-sonic wave.

3,737,845

SUBSURFACE WELL CONTROL APPARATUS AND METHOD

Harold W. Maroney, Box 44, Markham; Lester R. Hathcote, Box 356, Conroe, and Thomas W. Sparkman, Box 1410, Cedar Post Lane, Houston, all of Tex.

Filed Feb. 17, 1971, Ser. No. 116,153
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 P **11 Claims**



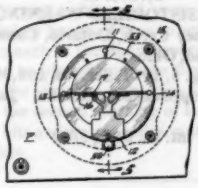
A new and improved method and apparatus for reliably and accurately controlling one or more operations of subsurface well drilling and well control equipment, and for reducing the likelihood of inadvertent actuation of such apparatus from stray or other undesired or spurious signals, is disclosed.

3,737,846

AIRCRAFT GYROHORIZON INDICATOR WITH SIGNAL LAMP POSITIONAL ATTITUDE INDICATING MEANS

Ralph Hernandez, Jr., 420 Lincoln Road, Miami, Fla.

Continuation-in-part of Ser. No. 813,252, April 3, 1969. This application July 20, 1970, Ser. No. 56,356
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 AT **9 Claims**



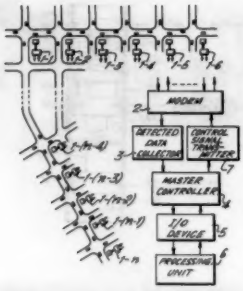
A combination gyrohorizon instrument for aircraft which visually indicates in addition to the dial display presentation of the instrument, by means of signal lamps appropriately placed with respect to the instrument dial and an audible signal indicative of energization of any one of the signal lamps, departures from straight and level flight that exceed reasonable limits of pitch and bank. The signal lamps, indicating "nose up," "nose down," "left wing down" and "right wing down" are in circuits energized by a first switching means controlled by the relative rotational position of the inner and outer gimbals of the instrument for sensing departure beyond reasonable safety limits in one direction or the other in the pitch axis, i. e., either "nose up" or "nose down" flight, and a second switch means controlled by the relative rotation position of the outer gimbal and the instrument casing for sensing departure beyond reasonable limits in the roll axis, i. e., either "left wing down" or "right wing down" flight.

3,737,847

TRAFFIC SIGNAL CONTROL SYSTEM

Toshio Kato, and Tatsuro Ichihara, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 25, 1971, Ser. No. 128,037
Claims priority, application Japan, Apr. 3, 1970, 45/28849
Int. Cl. G08g 1/08
U.S. Cl. 340—35 3 Claims



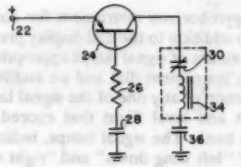
An apparatus for centrally controlling traffic over a wide geographical area. A master controller collects traffic information from traffic signal stations throughout the area at predetermined intervals, and stores this information in its associated memory, along with various operating time parameters associated with the traffic signal operation at each traffic signal station. A central processor reads and evaluates the traffic information stored in the master controller and continuously updates the operating time parameters. The master controller controls the traffic signals on the basis of their operating time parameters.

3,737,848

VEHICLE TRANSISTORIZED WARNING CIRCUIT

Rodney Hayden, Stoney Creek, Ontario, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 5, 1971, Ser. No. 169,399
Claims priority, application Canada, June 18, 1971, 115,987
Int. Cl. B60q 5/00
U.S. Cl. 340—52 D 3 Claims



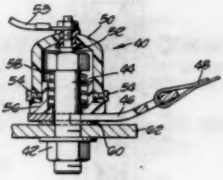
An electrical circuit including a source of voltage, a transistor, and two switches. The source of voltage and two switches each being connected to a different electrode of the transistor and a normally closed relay connected in series whereby actuation of the two switches will cause the relay to buzz or chatter.

3,737,849

SEAT BELT ALARM SYSTEM

Philip E. Mead, 16795 Ivy Avenue, Fontana, Calif.

Filed Aug. 30, 1971, Ser. No. 176,020
Int. Cl. B60r 21/00
U.S. Cl. 340—52 E 6 Claims



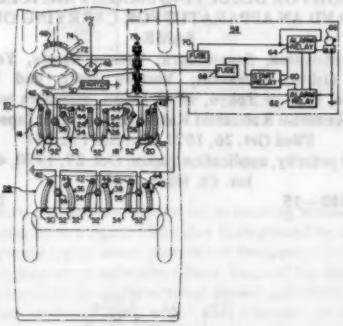
A seat belt alarm system for vehicles which incorporates a pressure switch which secures the seat belt to the floor or frame of the vehicle and an audio and/or visual warning feature that is activated by the failure of the driver and/or passenger to open the switch by properly fastening their seat belts.

3,737,850

VEHICLE SAFETY BELT SENSOR SYSTEM

Richard F. Kopp, 308 Morse Drive, Northlake, Ill.

Filed Feb. 10, 1972, Ser. No. 225,208
Int. Cl. B60r 21/00
U.S. Cl. 340—52 E 6 Claims



A vehicle safety belt sensor system whereby the presence of an occupant in a vehicle seating position is sensed and used as a criterion for preventing the operation of the vehicle when a seat belt or harness at the occupied position is nto in actual use.

3,737,851

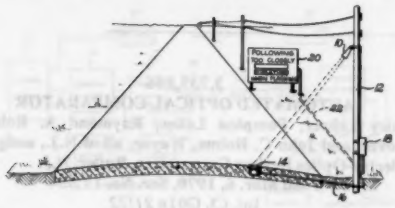
PRECISION VEHICLE INTERVAL DETECTION AND SIGNALING SYSTEM

Arthur N. Marshall; James W. Rinehart, and Charles A. Gregory, Jr., all of Richmond, Va., assignors to Traffic Safety Systems, Inc., Richmond, Va.

Filed Apr. 1, 1971, Ser. No. 130,382
Int. Cl. G08q 1/09
U.S. Cl. 340—104 R 14 Claims

A beam of radiant energy, such as from an infrared transmitter, is directed in a path, preferably downwardly, across the center of a traffic lane to impinge upon an appropriate photoelectric receiver or other detector so that a vehicle interrupts the beam path as it travels along the traffic lane. As the vehicle moves on out of the beam path, the beam again imp-

inges on the receiver to produce an output indicating passage of the rear of a vehicle to actuate a first timing delay circuit that produces a minimum timing interval, such as 0.2 seconds. Timing delay circuits defining longer unsafe and/or illegal headway intervals between the rear of one vehicle and the front of a following vehicle are then actuated at the conclusion of this minimum interval to generate a signal from the system



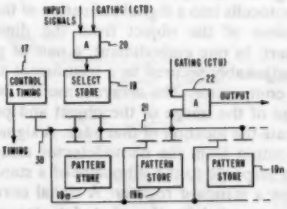
indicating unsafe or illegal "tailgating" conditions if the beam is again interrupted within these defined intervals. However, if the beam is prematurely interrupted during the minimum interval defined by the first timing delay circuit, the system is prevented from responding to indicate arrival of another vehicle or to signal an unsafe or illegal headway interval between vehicles.

3,737,852

PATTERN RECOGNITION SYSTEMS USING ASSOCIATIVE MEMORIES

Thomas E. Robinson, Hampshire, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1971, Ser. No. 121,667
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3 Q **17 Claims**



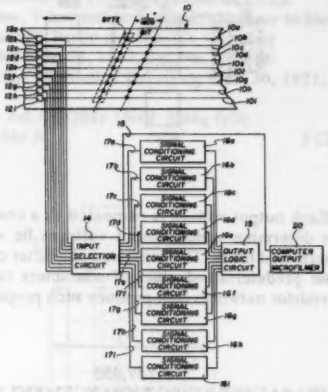
In a pattern recognition system, a pattern is either presented as a bit string or is transduced to the form of a bit string. An associative store cycles to select different sections of the bit string for application to a data bus to which is connected a plurality of associative stores for both data input and data output. The bit string sections are processed in each store of the plurality of associative stores against tables located in the store to locate either matched words or completely matched tables resulting in a bit pattern gated onto the data bus identifying the pattern, representing the information content of the pattern or signifying that the pattern is one which the system cannot recognize.

3,737,853

APPARATUS FOR SENSING AND PROCESSING MISSING OR ERRONEOUSLY RECORDED INFORMATION

Allan J. Wolfer, La Jolla, and Edward Cooper, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,837
Int. Cl. G06f 11/10; G06k 5/04
U.S. Cl. 340—146.1 F **5 Claims**



Apparatus for sensing and processing missing or erroneously recorded phase encoded binary information recorded upon a plurality of tracks of a suitable information storage medium such as a magnetic tape. Each track is recorded with binary information taking the form of periodically spaced, information bearing significant transitions and non-significant transitions spaced therebetween. The significant transitions are stored upon a first plurality of storage devices associated with each of the tracks. If a significant transition is erroneously recorded or is missing, this error condition is sensed and is stored upon a second plurality of storage devices associated with each of the tracks. The corresponding significant transitions recorded on each of the tracks comprise a byte of information. The information bits and error condition signal are stored for a sufficient length of time to permit information bits corresponding to each of the significant transitions of the byte of information to be placed upon the first plurality of storage devices and for the signal(s) indicating an error condition to be placed upon the second plurality of storage devices. Then, the information bits and error condition signals if any, are read out in synchronism.

3,737,854

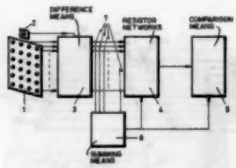
METHOD OF CLASSIFYING CHARACTERS WHEREIN THE EFFECTS OF VARIATIONS IN CONTRAST BETWEEN A PRESENTED CHARACTER AND ITS BACKGROUND AND VARIATIONS IN BACKGROUND BRIGHTNESS ARE REDUCED, AND THE APPARATUS THEREFOR

Arthur Klemt, Schwalbeneck 5, 8031 Olching, Germany

Filed Sept. 8, 1971, Ser. No. 178,686
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 AG **6 Claims**

A method of reducing the effects upon character classification attributed to variations in the contrast between a presented character and its background and to variations in background brightness, and the apparatus therefor, are disclosed in accordance with the teachings of the present invention. A presented character is partitioned into a plurality of raster areas and a voltage representing the light intensity of each raster area is produced. A reference voltage proportional to the light intensity of a background area is also produced

and difference voltages corresponding to the difference between the reference voltage and each raster area voltage are generated. The difference voltages together with the reference voltage are combined in resistor networks representing predetermined classes of characters to produce output voltages. Each output voltage is compared to a comparison voltage to determine which output voltages lie within certain predetermined limits. The presented character corresponds to the one predetermined class of characters represented by those resistor networks that produce such proper output voltages.

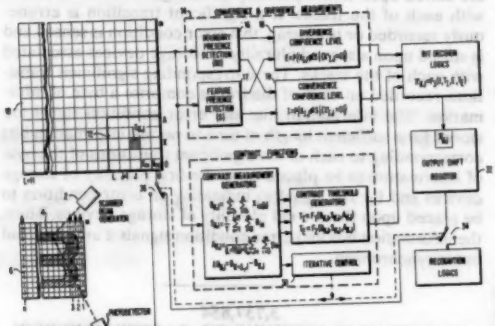


3,737,855

CHARACTER VIDEO ENHANCEMENT SYSTEM

Alfred Cutaia, Rochester, Minn., assignor to International Business Machines Corporation, Rochester, Minn.

Filed Sept. 30, 1971, Ser. No. 185,214
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 AG 13 Claims



Disclosed herein is a character video enhancement system which functions to minimize undesirable black fillins, noise and white voids in character patterns. The characters and noise patterns may be viewed as comprised of pluralities of elemental areas. Enhancement is accomplished by using a series of algorithms which enables a decision to be made at each elemental area as to whether a black mark in an elemental area should be converted to a white mark, or a white mark to a black mark or left black or white. The decision made at each elemental area is made independent of the raw video at that area and depends only on the markings in neighboring areas. For each elemental area, the surrounding neighborhood is investigated to determine:

a. the probability E that the surrounding elemental areas are not part of an a priori defined primitive feature set given that the elemental area under consideration is assumed to contain a white mark;

b. the probability I that the surrounding elemental areas are part of the a priori defined primitive feature set given that the elemental area under consideration is assumed to contain a black mark; and

c. threshold levels T_E and T_I determined on the basis of contrast measurements.

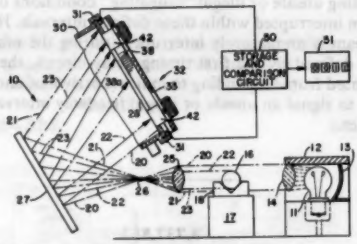
The probabilities E AND I are compared with the threshold levels T_E and T_I to determine whether the content of the elemental area under consideration should be altered or left as is.

3,737,856

AUTOMATED OPTICAL COMPARATOR

Stanley Lehrer, Pompton Lakes; Raymond A. Robertson, Dover, and John C. Holme, Wayne, all of N.J., assignors to Electro-Optics Devices Corporation, Butler, N.J.

Filed Mar. 6, 1970, Ser. No. 17,054
Int. Cl. G01n 21/22
U.S. Cl. 340—146.3 Q 19 Claims



Apparatus for automating the determination of the dimensional measurements of an object having its silhouette displayed on an optical comparator and providing a digital representation of those measurements. The apparatus utilizes a plurality of photodetector arrays, each of which includes a plurality of photodetectors, which operate in circuit with electronic storage and comparison means to convert the output from the photocells into a digital indication of the deviation of the dimensions of the object from the dimensions of a reference part. In one embodiment, a pair of photodetector arrays are adjustably secured to a translucent viewscreen on the optical comparator. The arrays sense the position of the shadow edge of the image of the object and provide signals which indicate the location of that edge. A signal corresponding to the output from the photodetector arrays which was produced in response to the silhouette of a standard object is stored within a standard register. A signal corresponding to the output generated by the photodetector arrays for the dimensions of the object to be measured is compared with the signals stored in the standard register to provide a digital readout which represents the deviation of the object from the standard. Each of the photodetector arrays includes a plurality of photocells which are secured in a linear spaced relationship within an array housing. The housing is slidably secured to a track member attached to one side of the viewscreen. Thus, the array may be adjusted with respect to the silhouette of the object displayed on the viewscreen to accommodate a wide range of dimensions. In other embodiments, a plurality of arrays are secured to the viewscreen for multi-dimensional or profile measurement. Circuit means are also provided for indicating when the boundary of the object is outside of the limits of the array. Means are also disclosed for electronically focusing and for automatically positioning the array module.

3,737,857

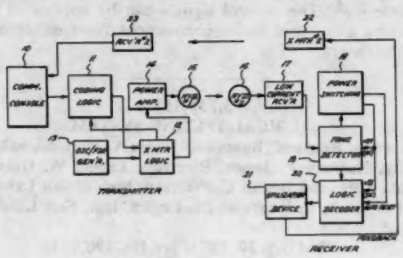
ACOUSTIC CONTROL SYSTEM HAVING ALTERNATE ENABLING AND CONTROL SIGNAL

Richard J. Carman, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Continuation of Ser. No. 38,761, May 19, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,582

Int. Cl. H04g 5/00

U.S. Cl. 340—148 R 16 Claims



A control system utilizing an acoustic link between a transmitter and a receiver and operating upon signals having a unique coding format. The transmitter generates and transmits an acoustic coded signal which comprises a plurality of space tones of one frequency, and a data tone of a different frequency between successive space tones. The receiver includes an input circuit that receives the transmitted coded signal and responds to the space tone to provide an enabling signal, and detecting and decoding means which is connected to the input means and rendered operative in response to the enabling signal to detect and decode the data tones to provide a control signal for controlling a remote device when a proper sequence of data signals is decoded.

3,737,858

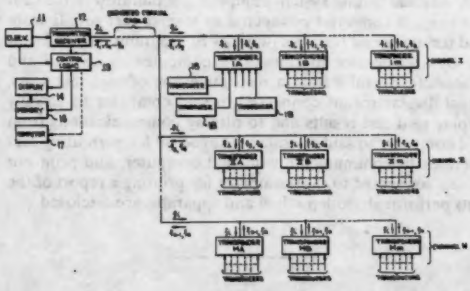
VERSATILE TELEMETERING SYSTEM

Loyce A. Turner, Smyrna, and Edward A. Rollor, Jr., Marietta, both of Ga., assignors to Advanced Research Corporation, Atlanta, Ga.

Filed July 13, 1971, Ser. No. 162,111

Int. Cl. H04q 9/1

U.S. Cl. 340—151 33 Claims



A telemetering system permits multiple functions to be monitored in response to each interrogation pulse by utilizing multiple sets of reply frequencies to distinguish between simultaneous reply pulses. The status of the various functions is displayed on a color television screen segmented into a grid wherein the color of each grid location represents the status of a respective monitored function. Remote utility meter reading is effected using a single reply pulse per interrogation by monitoring only one dial of a multiple-dial meter for intervals of angular motion of the indicator and updating a total accumulated count at the central station each time a unit of fractional revolution is sensed. In a preferred embodiment, telemetering is effected via a coaxial cable dedicated solely to the telemetering system.

3,737,859

SELECTION MATRIX PROTECTED AGAINST OVERCHARGING AND DESIGNED FOR A DATA MEMORY HAVING RANDOM ACCESS

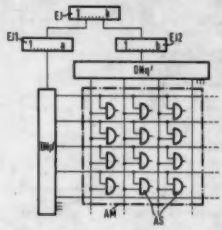
Hermann Kadow, Vaterstetten, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 21, 1972, Ser. No. 236,696

Claims priority, application Germany, Mar. 30, 1971, P 21 15 371.9

Int. Cl. G01r 15/12; H04q 9/00

U.S. Cl. 340—166 R 3 Claims



A selection matrix for a data memory having random access and which is dimensioned for a medium loading such as exists during normal operation and to which a control device is assigned which ensures that even in exceptional cases such as constant order the selection circuits are not overloaded the selection matrix employing a control system constructed as a selection matrix, two groups of control signal generators each corresponding to lines and columns of the selection matrix by which individual control signal generators may be selected.

3,737,860

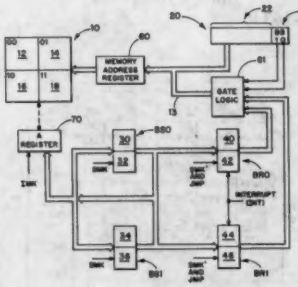
MEMORY BANK ADDRESSING

Michael Sporer, Somerville, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 13, 1972, Ser. No. 243,700

Int. Cl. G11c 7/00

U.S. Cl. 340—172.5 12 Claims



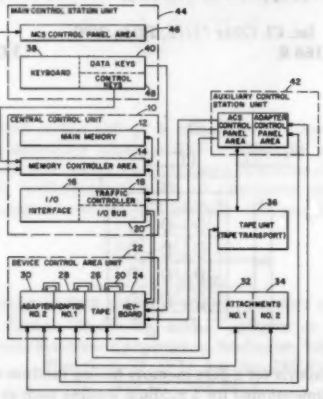
Any one of multiple memory banks and storage locations therein are selected in response to a first address and a second address respectively. The first address is formed in either of two registers, one of which is selected in response to a bank select signal. In response to an interrupt condition, either or both of the registers are enabled to address preselected ones

of the memory banks. Further means are provided to restore either or both of the registers to their contents prior to the interrupt condition.

3,737,861
INPUT/OUTPUT BUS

William F. O'Neill; Farid J. Neema, both of San Diego, Calif., and Edward P. Hopey, Chelmsford, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 1, 1970, Ser. No. 24,771
Int. Cl. G06f 3/04
U.S. Cl. 340—172.5 21 Claims

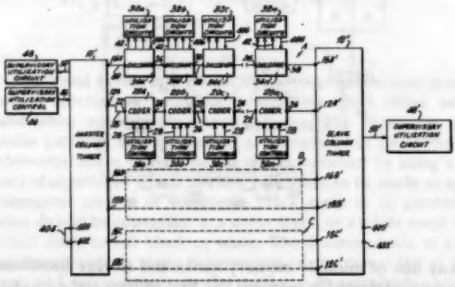


A data processing system having a central control unit and an input-output bus connecting the central control unit with one or more of a plurality of peripheral devices which may include a magnetic tape unit and a keyboard. The input-output bus contains a group of bidirectional multifunction lines and a second group of control lines which form an array, the intersections of which control transmission of data or commands across the input-output bus.

3,737,862
CONTROL SYSTEM HAVING COLUMN TIMERS AT EACH END

Zygmund Reich, Huntington, N.Y., assignor to Instrument Systems Corporation, Jericho, L.I., N.Y.

Filed Apr. 24, 1972, Ser. No. 246,919
Int. Cl. H04g 9/00
U.S. Cl. 340—163 R 20 Claims

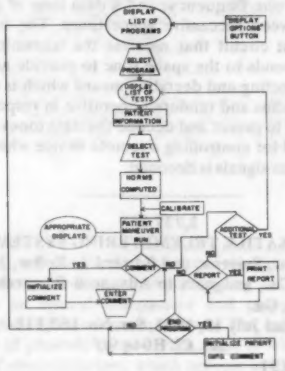


A control system for disposing each of a plurality of utilization circuits in a state responsive to the state of corresponding utilization controls. A plurality of series-connected coders detect the state of the utilization controls associated therewith. Decoders associated with each of said coders and in series connection in the same sequence as said corresponding coders control the state of the corresponding utilization circuits. A column timer is connected to each end of the series connections of said coders and decoders for applying control signals thereto. Each of the coders and decoders is sequentially activated to a first active state, during which they are operative to perform their assigned functions. Thereafter, each activated coder and decoder assumes an inactive state in which they permit the passage of control signals and data therethrough. The control signals can be applied in either direction along said series connections from either of said column timers.

3,737,863
MEDICAL TESTING SYSTEM

Richard C. Rowland, Bountiful; James A. Mahood, Salt Lake City; Norman P. Jessee, Riverton; Robert W. Geer, Salt Lake City, and Dennis C. Peterson, both of Salt Lake City, all of Utah, assignors to Bio-Logics, Inc., Salt Lake City, Utah

Filed Oct. 20, 1971, Ser. No. 190,997
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 1 Claim



A medical testing system comprising a plurality of medical test units, a computer connected to receive test results from said test units and having a plurality of programs each selectable by an operator to cause said computer to acquire and process test results from a respective one of said test units, visual display means connected to said computer to visually display said test results and to display communications from said computer to said operator, a keyboard for permitting said operator to communicate with said computer, and print out means connected to said computer for printing a report of the tests performed. Both method and apparatus are disclosed.

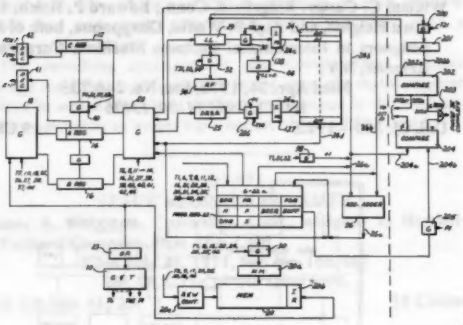
3,737,864
METHOD AND APPARATUS FOR BYPASSING DISPLAY REGISTER UPDATE DURING PROCEDURE ENTRY

John R. Werner, Glendora, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,178
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 14 Claims

A data processing system of this disclosure has an addressable main memory and a data processor for executing instruc-

tions stored in the main memory. Each of a plurality of main memory storage locations has stored in it one of a plurality of control words. Each control word is associated with one of a sequence of numbers that are referred to as lexicographical levels. Each of a plurality of information fields is contained in a different one of the control words and each information field provides an indication which is said to point to a control word that is associated with the next lower lexicographical level from the control word containing the information field. By virtue of these information fields, the control words are linked together to form a tree structured list, and each of a plurality of groups of the control words form one of a plurality of what are referred to as paths of the tree. All paths of the tree have in common at least one control word. That is, at least the control word associated with the lowest lexicographical level is a part of every path. On the other hand, the control words that are associated with higher lexicographical levels may be in either in only one path or in a plurality of the paths. The data processor has a plurality of display registers. During operation of the system, each of a group of the display registers contains an indication, preferably what is referred to as an absolute address, which is said to point to a successive one of the control words in one of the paths of the tree. Each display register is associated with the same lexicographical level as the control word to which the indication in that display register points. The data processor has control and timing circuitry responsive to a predetermined instruction for automatically updating the display registers so that, after execution of this instruction, the indications stored in the display registers point to control words in a new path of the tree (i.e. a different path from the path of the tree containing the control words pointed to before execution of this instruction). In updating the display registers, control words in the new path of the tree are transferred to the data processor by sequentially reading them out of the main memory in a sequence that proceeds from higher to lower lexicographical levels. The information fields contained in the transferred control words are each used to produce the address of the memory location storing another control word in the sequence and also to produce an updated indication for storage into a sequentially selected one of the display registers. Means are provided for bypassing the updating of display registers, which includes means for indicating when the display registers associated with lower lexicographical levels and which have not yet been updated already contain indications pointing to the control words in the new path of the tree.



3,737,865

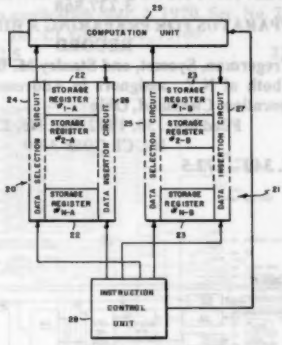
Patent Not Issued For This Number

3,737,866

DATA STORAGE AND RETRIEVAL SYSTEM

Ronald H. Gruner, Framingham, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed July 27, 1971, Ser. No. 166,508
Int. Cl. G06f 9/10
U.S. Cl. 340—172.5 **9 Claims**



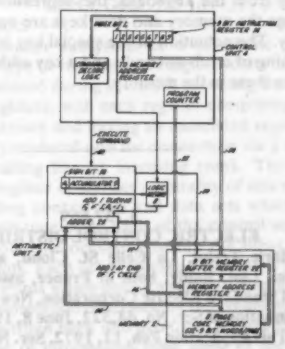
A data storage and retrieval system which in a preferred embodiment thereof uses at least two integrated circuit units each having a plurality of storage registers and appropriate data access and data insertion means thereon. The same data is stored in corresponding storage registers in each integrated circuit unit so that simultaneous access can be obtained to data in two or more storage devices for supplying such data simultaneously to a data processing unit. Data received from a data processing unit can also be simultaneously stored in appropriately corresponding data registers of each integrated circuit unit.

3,737,867

DIGITAL COMPUTER WITH ACCUMULATOR SIGN BIT INDEXING

Doyle K. Cavin, 945 Verona Drive, Fullerton, and Robert B. Trousdale, 13722 Rushmore Lane, Santa Ana, both of Calif.

Continuation-in-part of Ser. No. 790,735, Jan. 13, 1969, abandoned. This application Feb. 12, 1971, Ser. No. 114,902
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 **2 Claims**



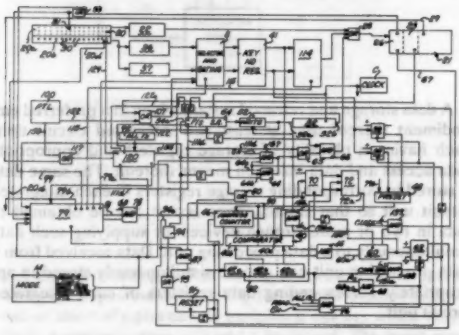
In lieu of a separate indexing register, the sign bit of the accumulator may be made to function as a single bit index register to effectuate address modification. In a machine so organized the instructions have a reserved bit position which gives the programmer the option of selecting modified or un-

modified addressing. Because of the versatility of this type of instruction, only a few instructions are required to in-line program a variety of normally iterate routines.

3,737,868
APPARATUS FOR PREPARING A BINARY CODED RECORD

Leon Tregerman, Syosset, and Stanley M. Brindle, East Setauket, both of N.Y., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Mar. 30, 1972, Ser. No. 239,445
Int. Cl. G06k *3/00*
U.S. Cl. 340—172.5 **14 Claims**



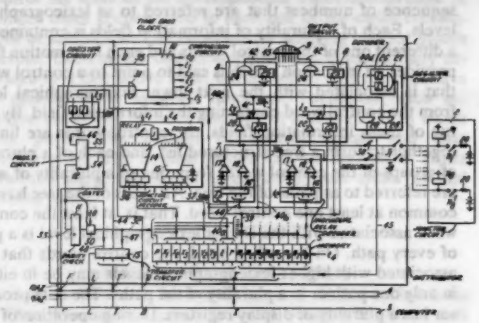
Keyboard encoding apparatus for preparing binary coded tape. The keyboard has special address keys for addressing a memory which, in response to the depression of a key, effects coding of a message on a tape comprising a plurality of words. The memory may be loaded from the keyboard or from paper tape and a punched tape is prepared when loading a memory from the keyboard. The memory may also be read to provide a check tape of data stored therein including key address and rub-out codes not stored in the memory. When loading the memory from the keyboard, the depression of a special key addresses the memory and data keys are operable to load the memory. The actuation of the special key in this mode effects a punching of a rub-out code and a key address code but does not store these in the memory.

3,737,869
ELECTRIC CONTROL DISTRIBUTOR

Jean Marie Treiut, La Celle St. Cloud, and Jean Bernard Michel, Liot, Bailly, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 44,322, June 8, 1970, abandoned.
This application Feb. 11, 1972, Ser. No. 225,612
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **3 Claims**

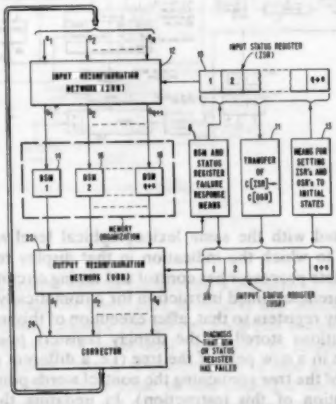
This distributor may be thought of as an interfacing circuit for use between a digital computer and peripheral equipment, such as a telephone exchange, controlled by the computer. The components of the peripheral equipment are bi-stable and may be operated in groups or singly. The interfacing circuit cyclically tests these bistable components through the operating program of the peripheral unit. At each test, a comparison check against the program is made.



3,737,870
STATUS SWITCHING ARRANGEMENT

William C. Carter, Ridgefield, Conn.; Edward P. Hsieh, Yorktown Heights, and Aspi B. Wadia, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,733
Int. Cl. G06f *11/00*, *13/06*
U.S. Cl. 340—172.5 **9 Claims**



There is disclosed a switching arrangement for effecting storage module reconfiguration in a data processing system wherein the memory comprises a quantity *q* of operating n-bit/BSM's (basic storage modules) and a quantity *s* of spare n-bit/BSM's. The arrangement comprises an input status register means which in turn comprises an input status register associated with each of the BSM's respectively, which control an input reconfiguration network, and an output status register means which comprises an output status register respectively associated with each of the BSM's, which control an output reconfiguration network. The input and output status registers and the input and output reconfiguration networks are of like structures, respectively. Initially, in normal operation, the operating BSM's are connected to respective bit positions and all of the input and output status registers assume a chosen initial state. Initially, upon the ascertaining from a diagnosis, for example, that one of the operating BSM's has failed, the input status register with which the failed BSM is associated is

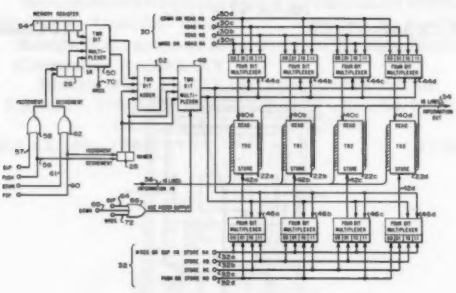
forced to a parity state opposite from the normal operating parity state, and all of the input status registers succedding in designated numerical value are switched to a next state. This causes the failed BSM to be disconnected from the input; the input originally connected to the failed BSM is connected to the BSM of succeeding higher value, the next higher input connected to the next BSM and so on until the last input is connected to the first pare BSM. At this point, all of the contents of the memory, i.e., the initially operating BSM's, are passed through the output reconfiguration network under the control of the output status registers (which is not yet altered) and through a correction circuit wherein there is provided means for applying an error correction code. The memory contents are then passed from the correction circuit back into the present operating BSM's through the input reconfiguration network under the control of the input status registers. Thereafter, the contents of the output status registers are then brought into conformity with the present contents of the input status registers whereupon normal operation can resume. The arrangement permits as many changes in the contents, i.e., states of the status registers after their initial states as there are spare BSMM's in the memory organization, the contents of status registers of operating BSM's which succeed a failed BSM being switched to a next state. Suitably, an operating parity state of a status register is of even parity and, when its associated BSM fails, its state is forced to an odd parity. An algorithm is presented for diagnosing as a failed BSM which is based upon the criterion of the ascertaining of a bit position which has undergone corrections most frequently over a chosen period of time.

The switching arrangement also contemplates a basic storage module reconfiguration in the case of a status register failure in which situation, similar events ensue in the arrangements operation as would have occurred has a BSM failed.

3,737,871
STACK REGISTER RENAMER

James A. Katzman, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 28, 1971, Ser. No. 166,867
Int. Cl. G11c *19/00*; G06f *9/06*
U.S. Cl. 340—172.5 **10 Claims**

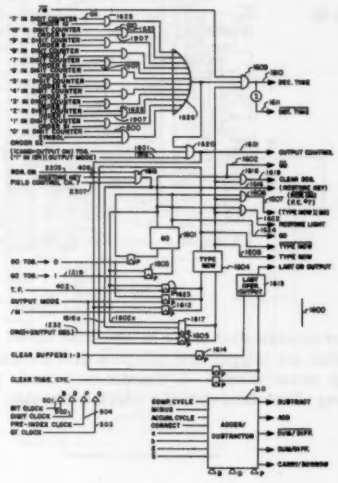


A stack oriented memory system for a computer is provided with a plurality of top of the stack registers. The top elements of a logical stack of information are stored in the stack registers and the remaining information is stored in core memory. An embodiment of a bookkeeping scheme for keeping track of the order of the information in the stack registers comprises two additional registers. A first register stores the number of stack registers filled with stack information. A second register stores a number representing a naming state which defines the logical order of the stack registers. There is also a third register for storing the location of the top piece of information in the stack in core memory. These three registers store the necessary information to keep track of the order of the information in and the size of the logical stack. These registers also facilitate the bookkeeping when information is added to or deleted from the stack registers.

3,737,872
PLUGBOARD SELECTION OF ORDINAL LIMITS OF REGISTER READOUT

Winsor Soule, Jr., Berkeley, and Leif Andreasen, Newark, both of Calif., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 434,265, Feb. 23, 1965, Pat. No. 3,522,416. This application Mar. 2, 1970, Ser. No. 24,904
Int. Cl. G06f *9/02*, *15/00*
U.S. Cl. 340—172.5 **22 Claims**



Designation of the start and end of readout of a register's contents by use of a plugboard in conjunction with the usual digit position identification signals, together with instructions on program media for selection of alternate designations.

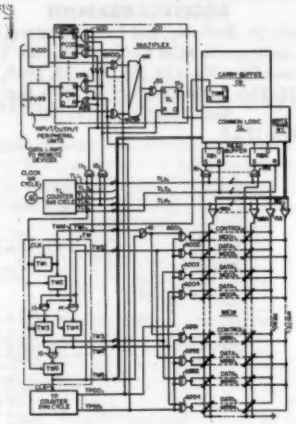
3,737,873
DATA PROCESSOR WITH CYCLIC SEQUENTIAL ACCESS TO MULTIPLEXED LOGIC AND MEMORY

Sergio E. Puccini, Wood Dale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Del.

Filed Nov. 24, 1971, Ser. No. 201,851
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **39 Claims**

The register-sender subsystem of a telephone switching system is of the type having common logic circuits including a wired program shared during cyclically recurring time slots by a plurality of registers, with each register comprising a block of a common memory and having an associated register junctor serving as a peripheral unit for connection via a switching network to a calling line or incoming trunk. The memory block for each register comprises a plurality of sets of storage elements including control sets and data sets which are accessed during sub-time slots, each of the control sets having two sub-time slots, one occurring before the other after the data sub-time slots. Each set of storage elements is organized as two memory words which during a sub-time slot, are read in sequence, the information processed by the common logic circuits, and then written back into memory. A carry buffer provides for storage of information from some of the sub-time slots for use during other sub-time slots, and is cleared at the end of the complete time slot. A stored program main processor also is provided with random access to the register-sender memory. The register-sender is provided with mode control to skip data sub-time slots, with a normal mode in which called

digits are received via a register junctor and stored into memory into called number word stores, while sub-time slots for calling number storage are skipped; and an automatic-



number-identification mode in which the called number sub-time slots are skipped and sub-time slots for calling number storage occur instead. A maintenance mode provides for scanning all sub-time slots of a selected time slot.

3,737,874

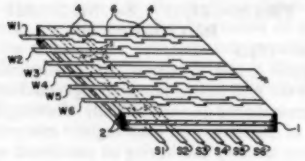
CAPACITIVE READ ONLY MEMORY

George A. Hess, Acton; John H. Kefalas, Billerica, and Richard D. MacInnes, Littleton, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 3, 1970, Ser. No. 94,719

Int. Cl. G11c *17/00*

U.S. Cl. 340—173 SP 4 Claims



A capacitive read only memory which has a ground plane with a plurality of holes, a plurality of word conductors insulated from and disposed over one surface of the ground plane, and a plurality of sense conductors insulated from and disposed on the other surface of the ground plane. The word and sense conductors are substantially orthogonal to one another so as to define a plurality of conductor intersections, at least some of which correspond with the holes in the ground plane. An intersection position at which there is no hole identifies one of the binary storage states, while an intersection position corresponding with a hole in the ground plane identifies the other storage state.

3,737,875

DEVICE FOR SELECTING INFORMATION

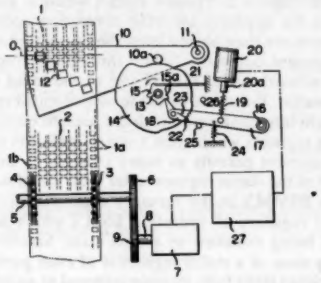
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation of Ser. No. 813,035, April 3, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,415

Claims priority, application Japan, Apr. 13, 1968, 43/24622; Apr. 13, 1968, 43/24623

Int. Cl. G11c *11/42*; G11b *7/00*

U.S. Cl. 340—173 LM 1 Claim



An information selecting device having information stored in rows and columns in a storage medium. Wheels drive the medium in increments according to pulses from a command unit. This same unit sends pulses to a movable selection plate having apertures therein to select information from the medium.

3,737,876

METHOD AND DEVICE FOR SCANNING INFORMATION CONTENT OF AN OPTICAL MEMORY

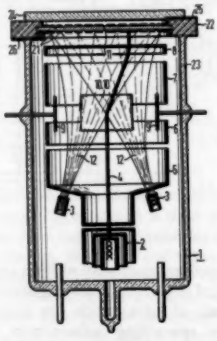
Dieter Froelich, and Wolfgang Welsch, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 16, 1971, Ser. No. 153,568

Claims priority, application Germany, June 24, 1970, P 20 31 320.6

Int. Cl. G11c *11/42*

U.S. Cl. 340—173 CR 12 Claims



An electron beam tube for use in retrieving information from an optical memory characterized by being provided with one or more electron guns for flooding the matrix of photosensitive elements after a retrieval cycle to erase any information stored thereon prior to a subsequent retrieval cycle. The photosensitive elements of the electron tube are arranged in columns and rows corresponding to the columns and rows of the stored information of the optical memory and may include

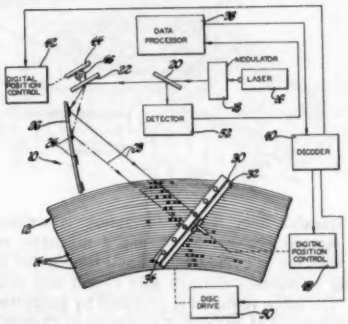
at least one row of switching diodes utilized to control the scan of the reading electron beam along the desired column.

3,737,877

DATA STORAGE SYSTEM WITH COARSE AND FINE DIRECTING MEANS

Julius Feinleib, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sept. 24, 1970, Ser. No. 75,002
Int. Cl. G11c *13/04*; G01d *15/14*; G02b *5/08*
U.S. Cl. 340—173 LT **18 Claims**



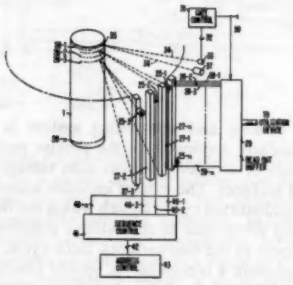
An optical memory for a data processor comprising an optical memory disc having concentric data tracks, a first coarse adjustment device for selectively directing a laser beam onto each of widely spaced areas across the disc and a second fine adjustment device for selecting the desired track within the selected area.

3,737,878

HOLOGRAPHIC READ/WRITE STORAGE SYSTEM

Rodger L. Gamblin, Vestal, N.Y., and Carl D. Southard, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 813,198, April 3, 1969, Pat. No. 3,656,827. This application Mar. 22, 1971, Ser. No. 127,013
Int. Cl. G11c *13/04*; G02b *27/00*
U.S. Cl. 340—173 LM **4 Claims**



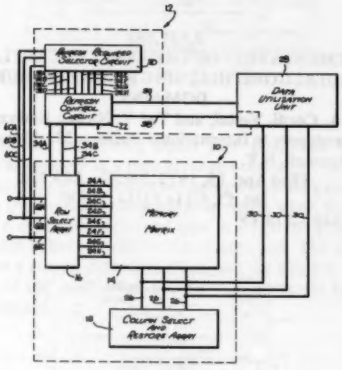
The invention relates to a holographic mass data storage system in which coded representations of data are recorded on the photosensitive surface of a drum sequentially under control of mechanical means, and means for reading the written information, by reflection onto an array of radially disposed photodetectors. An address control means is provided whereby the written information may be selectively read out in any desired combinations of words of information.

3,737,879

SELF-REFRESHING MEMORY

Richard M. Greene, Audubon; Donald L. McLaughlin, and John O. Palvinen, both of Newtown Square, all of Pa., assignors to Mos Technology, Inc., Valley Forge, Pa.

Filed Jan. 5, 1972, Ser. No. 215,506
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **20 Claims**



A self-refresh circuit having a counter connected to each row of a memory matrix. The matrix is formed of memory units which require repeated refreshing to retain the stored information and the maximum count of each counter corresponds in time to the maximum time that the memory units are permitted to be without a refresh. Each time a row of the matrix is accessed for a writing or a reading and restore operation, the corresponding row counter is reset and its count begins again, so that if at any time the row is not accessed within the period permitted for refreshing a memory unit, its counter completes its count and initiates a mandatory refresh operation for that row while temporarily inhibiting all access to the memory. Also, there is a program sensing unit which determines from the nature of the program steps when access to the memory is not required for a sufficiently long time to permit one or more rows of the memory to be refreshed. When such a time period is detected, a voluntary refresh operation of one or more memory rows nearest to requiring a mandatory refresh is effected, and the corresponding row counters are reset to avoid any interference with the mandatory refresh operation and yet minimize the time in which access to the memory will be inhibited for purposes of memory refresh.

3,737,880

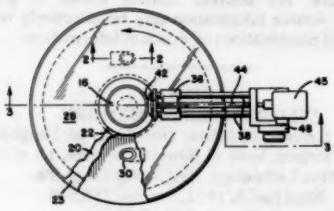
FLEXIBLE DISC WITH AIR INTAKE IN TURNTABLE

Jerry O. Kelley, Grass Valley, Calif., assignor to Arvin Industries, Inc., Grass Valley, Calif.

Filed Sept. 10, 1971, Ser. No. 179,465
Int. Cl. G11b *5/60, 25/04*
U.S. Cl. 340—174.1 E **3 Claims**

A magnetic disc recorder includes a removably mounted lightweight disc having a shallow air chamber over which is fastened a flexible membrane of recording media. The disc is

removably held on a turntable and aligned air passages lead to the interior of the chamber from an external scoop which



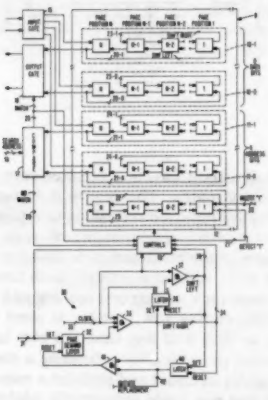
forces air into the chamber upon rotation. Such pressurization expands the membrane to contact a transducer.

3,737,881

IMPLEMENTATION OF THE LEAST RECENTLY USED (LRU) ALGORITHM USING MAGNETIC BUBBLE DOMAINS

Vincent A. Cordi, Vestal, and Ted Y. Nickel, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,752
Int. Cl. G11c *11/14*, *19/00*
U.S. Cl. 340—174 TF **5 Claims**



A Least Recently Used (LRU) Algorithm is implemented in a dynamically ordered, magnetic bubble domain shift register to enhance both the speed and cost reduction of paging between levels of a storage hierarchy containing a large quantity of data.

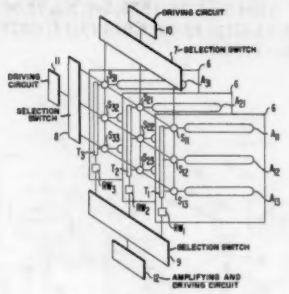
3,737,882

CYLINDRICAL MAGNETIC DOMAIN MEMORY APPARATUS

Takashi Furuoya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Jan. 28, 1972, Ser. No. 221,699
Claims priority, application Japan, Feb. 6, 1971, 46/4811
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **10 Claims**

A cylindrical magnetic domain memory having a plurality of storage channels which can be written into via one domain generating source and read-out from via one domain detecting means without any relative time loss due to the distance of the storage channel from the detecting or generating means. Each storage channel circulates the bubbles therein continuously along a closed path. A magnetic switch, when actuated, forces an alteration in said closed path so that a circulating bubble comes near enough to a string of closely packed bubbles in a read-out channel of a magnetic domain transfer line. This creates a repulsive force on the string of bubbles causing the bubble at the very end of the read-out channel to be forced into the bubble detector. A separate string of closely packed bubbles appears in the write-in channel of the magnetic



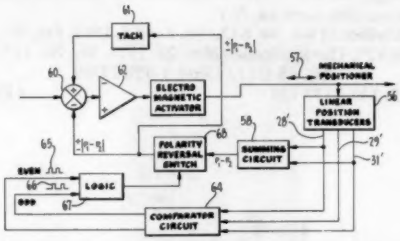
domain transfer line. New information is written into a selected storage channel by closing a magnetic switch associated with the selected channel and forcing the nearest of said string of bubbles through said switch into said storage channel. The force required is provided by generating a bubble and inserting it at one end of said write-in channel, thereby causing sequential repulsion between adjacent bubbles in said string.

3,737,883

LINEAR POSITIONING APPARATUS FOR MEMORY DISC PACK DRIVE MECHANISMS

Frank J. Sordello, and In W. Ha, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

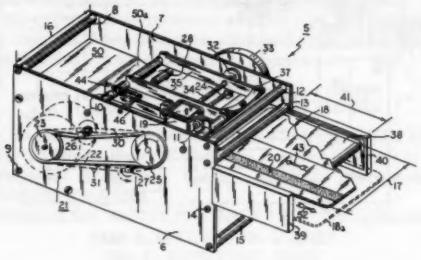
Filed Aug. 18, 1971, Ser. No. 172,781
Int. Cl. G11b *5/56*
U.S. Cl. 340—174.1 C **16 Claims**



A position sensing and positioning system is described which is particularly applicable to the precise positioning of read/write heads of a random access data storage device to disc recording surfaces The system includes sensors capable of generating undistorted cyclic signals which are linearly proportional at any given time to the relative positioning of the heads with respect to the disc surfaces. Such cyclic signals are combined to provide a triangular vs. spatial position control signal for regulating a mechanical moving device for the heads, and a comparator is included to determine the slope of the signal at each of its states representative of the positions at which it is desired that the heads be located relative to the discs. A polarity reversal switch is provided for changing the

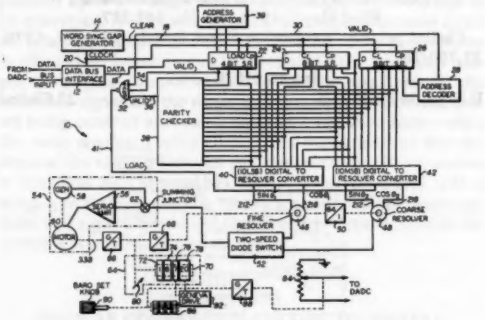
polarity of the control signal as necessary for it to properly regulate the mechanical moving device.

3,737,884
MAGNETIC CARD READER-ENCODER
John G. Wallace, 35 Esty St., Ashland, Mass.
Filed June 28, 1971, Ser. No. 157,369
Int. Cl. G11b *15/29;* **G06k** *7/08*
U.S. Cl. 340—174.1 R **7 Claims**



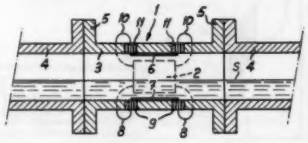
An improved low-wear automatic card-processing device, for machine readable cards of the type having a magnetically encoded stripe of magnetic substance, includes a non-reversing motorized belt drive for spring-biased rollers which induce a positive feed of a card past a spring-floated magnetic read-record head and which further positively convey the card to a discharge site after processing.

3,737,885
DIGITAL RESPONSIVE ALTIMETER
Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.
Filed Mar. 31, 1971, Ser. No. 129,812
Int. Cl. G08c *19/48*
U.S. Cl. 340—198 **24 Claims**



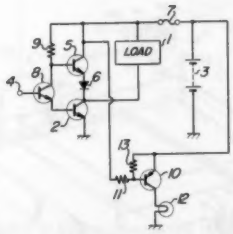
An apparatus for providing an analog indication of altitude in response to a digital altitude information signal, such as from a digital air data computer. The apparatus preferably provides coarse-fine altitude selection. Means, such as a digital-to-resolver converter operatively connected to a resolver, provides an analog synchro signal in response to the digital altitude information signal. A servo network, such as one which includes a brushless D. C. motor, is operatively connected to the synchro signal providing means, such as to the resolver. The servo network provides an analog servo driving signal which is utilized to drive an analog display device, such as one which includes an altitude counter and analog pointer in which a geneva drive transfer mechanism interconnects the least two significant display positions, such as the tens and hundreds positions of the altimeter display.

3,737,886
APPARATUS FOR MONITORING LIQUID FLOW
Wolfgang Dinges, Dusseldorf, Germany, assignor to Lacoray S.A., Geneva, Switzerland
Filed Aug. 20, 1971, Ser. No. 173,378
Claims priority, application Switzerland, Sept. 2, 1970, 13080/70
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **7 Claims**



Apparatus for monitoring liquid flow comprises two resistance strain gauges in a pipe arranged one above the other and an electronic alarm circuit including the strain gauges and comparing their readings to actuate an alarm when the liquid content of a generally horizontal pipe in which the gauges are installed, falls below a predetermined minimum. The liquid in the pipe has a gravity-defined surface, and the alarm is thus an indication of the position of that surface vertically between the strain gauges.

3,737,887
PROTECTIVE DEVICE OPERATIVE UPON TRANSISTOR FAILURE
Hisato Wakamatsu, Kariya, and Akira Kitano, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan
Filed Nov. 26, 1971, Ser. No. 202,344
Claims priority, application Japan, Nov. 27, 1970, 45/104984; Dec. 4, 1970, 45/107847
Int. Cl. G08b *21/00;* **H02h** *3/04*
U.S. Cl. 340—248 E **2 Claims**

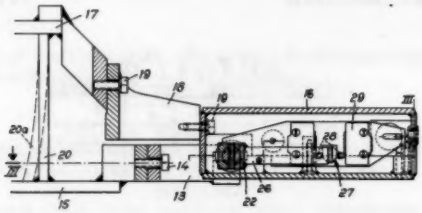


A protective device operative upon the failure of a transistor, which is designed such that when a short-circuit occurs between the collector and emitter of a transistor for controlling the supply of current to a load or when the lead connecting said load to the collector of said transistor is grounded directly connecting the load to the ground, the fault may be readily detected so that a fuse provided between the load and a power source is caused to blow and a warning means such as a lamp is caused to give warning to the operator about the occurrence of the fault and at the same time the supply of current to the load is forcibly interrupted, thereby eliminating various defects that would be otherwise caused by any unnecessary supply of current to the load.

3,737,888
METHOD OF DETECTING AN OVERSTEPPING OF A MAXIMUM PARAMETER ADMISSIBLE FOR THE OPERATION OF A MACHINE

Bernard J. Cheze, Montceau-les-Mines, France, assignor to Potain Poclaim Materiel, Montceau-les-Mines, France

Filed Mar. 12, 1971, Ser. No. 123,541
Claims priority, application France, Mar. 17, 1970, 7009516
Int. Cl. G08b 21/00
U.S. Cl. 340—267 R 16 Claims

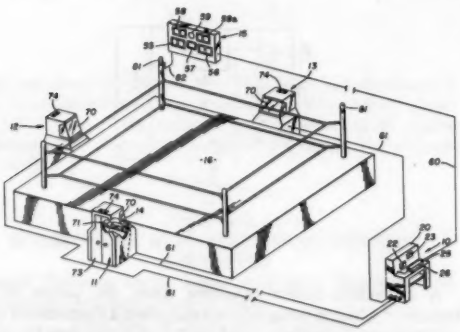


A detecting apparatus for detecting excessive mechanical stresses on a machine having a one-piece structural element the first part of which moves with respect to a second part to an extent determined by the mechanical stress applied to the machine includes a casing rigidly secured to one of those parts and a plurality of electrical switches mounted in the casing. A first arm means is mounted on the other of the first and second parts of the machine and first cam means is rotatably mounted on the casing in contact with the first arm means for rotation thereby upon movement of the first part with respect to the second part. The cam means are operatively connected to the switch means to selectively actuate the switch means upon stressing of the structural elements of the machine.

3,737,889
SCORING SYSTEM FOR ATHLETIC EVENTS

Edward J. Sweeny, 3530 Fenley Road, Cleveland Heights, Ohio

Filed Mar. 3, 1971, Ser. No. 120,550
Int. Cl. G08b 23/00
U.S. Cl. 340—323 7 Claims

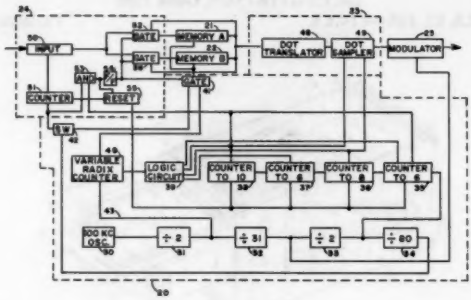


A method and apparatus for scoring athletic events such as a boxing contest. Each official is provided with an individual panel upon which performance points are recordable. The points scored by each individual judge or official are transmitted into a master console for cumulative progressive scoring of the event as it progresses, with the collected points being flashed on a scoreboard that is visible to the audience so that they may be progressively aware of the standing of the contest as it progresses.

3,737,890
CHARACTER TO DOT GENERATOR

Roger F. Salava, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 24, 1970, Ser. No. 66,489
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 25 Claims

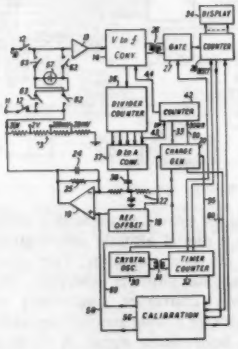


An apparatus for converting binary signals representing characters to dot matrix signals representing the characters and transmitting the dot matrix signals in a particular sequence. A plurality of binary signals representing a predetermined number of alpha-numeric characters are coupled to a first memory and recirculated through the memory in a predetermined sequence. A dot translator coupled to the memory output converts the binary signals to dot matrix signals representing the character. A dot sampler selects particular of the dot matrix signals and couples them to a modulator for phase modulating an output signal. A second storage memory identical to the first storage memory can be used to store a second group of binary signals while the binary signals in the first group are being recirculated.

3,737,891
DIGITAL VOLTMETER

Eric Metcalf, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed May 7, 1971, Ser. No. 141,327
Claims priority, application Great Britain, May 11, 1970, 22,750/70
Int. Cl. H03k 13/02
U.S. Cl. 340—347 CC 23 Claims



An input voltage is converted to a digital output by applying the voltage to a voltage to frequency converter whose output is counted for a measured interval. To obtain high digital resolution with a short measurement interval, the *v* to *f*

frequency at full scale input is very high. The voltmeter is linearized by completing a loop from the *v* to *f* converter, through a frequency divider and a standard charge generator supplying a fixed pulse of charge for each pulse from the divider, to a smoothing circuit which provides a voltage opposing the input voltage. The frequency divider is included because of the said high frequency, but then the slow speed of the pulses from the divider at small inputs causes the fixed pulses of charge to be inadequately smoothed. Therefore a digital to analogue converter is driven off the frequency divider binary stages to provide a periodic staircase ramp function which is a.c. coupled into the smoothing circuit to cancel out the a.c. component of the inadequately smoothed pulses.

Auto-calibration is provided at both plus and minus full scale input, enabling both zero offset and slope of the voltmeter calibration line to be corrected.

3,737,892

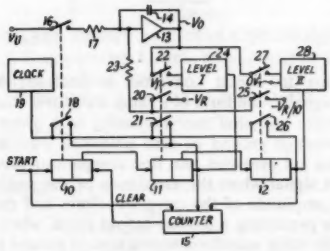
TRIPLE-SLOPE ANALOG-TO-DIGITAL CONVERTERS

Howard Anthony Dorey, Godalming, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Division of Ser. No. 764,490, Oct. 2, 1968. This application Mar. 8, 1972, Ser. No. 232,883

Int. Cl. H03k *13/02, 13/20*

U.S. Cl. 340—347 NT **4 Claims**



A ramp type analogue to digital converter including an integrating circuit the output of which is first set to a level dependent upon the magnitude of an analogue input voltage to be converted. A reference signal is then applied to ramp down the integrator output level to a datum level and the conversion is effected by counting clock pulses while the integrator output is ramping down to datum level. The magnitude of the reference signal and the numerical weighting of the clock pulses being counted are scaled down by a common factor when the ramp reaches a value close to the datum level so that the slope of the ramp is reduced and the resolution of conversion is increased as it approaches datum. Thus, compared with a ramp type digital voltmeter having a constant slope discharge ramp and a given resolution, the discharge time is reduced for the same resolution of conversions.

3,737,893

BIPOLAR CONVERSION ANALOG-TO-DIGITAL CONVERTER

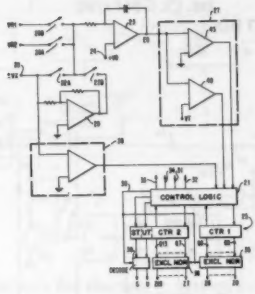
Joseph J. Belet, Delray Beach, and Jack L. Quanstrom, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1971, Ser. No. 131,749

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 NT **9 Claims**

Bipolar analog input signals are tested for apparent polarity, and depending on the polarity indication, the analog signal is either inverted or not inverted and resulting input signal is combined with a constant reference voltage so that the effective input to the analog-to-digital converter will always be a unipolar voltage having a minimum nominal value greater than the potential error of the polarity decision element. A counter or register type output device, which reflects the digital resultant from the conversion, is corrected by subtracting the digital equivalent of the constant reference voltage,



either by presetting the counter to an initial negative value or by subtraction following the conversion. The initial polarity decision further controls the readout, either direct or complemented, to correspond to the apparent polarity of the input signal.

3,737,894

ENCODER FOR HIGH-SPEED PCM SYSTEM

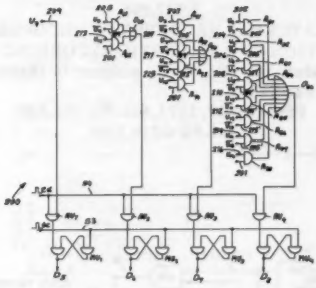
Isidoro Poretti, Catiglione, and Giancarlo Monti, Milan, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Oct. 28, 1971, Ser. No. 193,446

Claims priority, application Italy, Nov. 18, 1970, 31877 A/70

Int. Cl. H03k *13/06*

U.S. Cl. 340—347 AD **4 Claims**

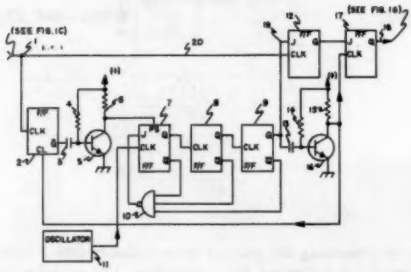


An analog signal to be encoded is fed in parallel to 16 comparison stages of 16 comparators each, every comparator working into an individual flip-flop to set it upon the occurrence of a reading pulse if the instantaneous signal amplitude surpasses a respective reference voltage selected in accordance with a predetermined coding characteristic spanning 16 amplitude ranges of 16 levels each. The outputs of the several fliptflops are selectively combined in a logic network deriving therefrom two halves of an eight-bit word; the first half, controlled by the highest-ranking comparison stage in which any comparator is operative to produce a finite output, determines the amplitude range whereas the second half, controlled by the highest-ranking operative comparator in that stage, determines the amplitude level within the designated range.

3,737,895
BI-PHASE DATA RECORDER

Frederick B. Cupp, Fairport, and Gary Van Camp, Palmyra, both of N.Y., assignors to EDMAC Associates Inc., Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,199
Int. Cl. G06f 3/00
U.S. Cl. 340—347 DD 1 Claim

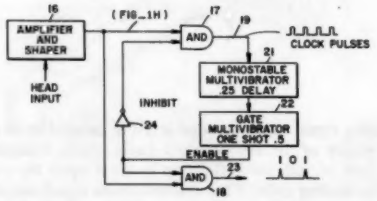


Apparatus is disclosed for decoding a stream of Bi-Phase mark data which includes an oscillator, operating at a frequency at least three times greater then the Bi-Phase data rate, and a counter. Differentiated pulses derived from the Bi-Phase mark data stream are applied to two flip-flops. The first flip-flop provides a pulse which enables the counter coupling it to the oscillator and permits the counter in response to the oscillator output to count a predetermined sequence. During a portion of the predetermined sequence of the counter, it enables the second flip-flop which in response to the Bi-Phase mark data pulses produces a binary data stream. When the counter reaches a predetermined number, it enables a gate which decouples the counter from the oscillator and the second flip-flop is then prevented from changing state.

3,737,896
APPARATUS FOR RECOVERY OF RECORDED BIT INFORMATION ON A MAGNETIC RECORDING MEDIUM

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Inc., Hayward, Calif.

Filed Oct. 27, 1971, Ser. No. 192,826
Int. Cl. G11b 5/06
U.S. Cl. 340—174.1 H 4 Claims

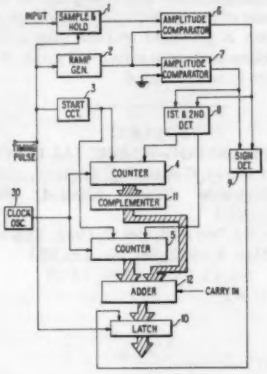


Apparatus for the recovery of recorded data bits from a magnetic recording medium where the data has been recorded by the frequency encoding or phase encoding method. Improved noise immunity and timing margins are provided by integrating the differentiated signal and summing the differentiated signal with the integrated signal to thus provide an improved playback waveform which is processed by a gating system which discriminates between clock pulses and data pulses.

3,737,897
ANALOG TO DIGITAL CONVERTER

Laurence Geoffrey Cuthbert, Harlow, and Raymond John Anderson, Boreham Wood, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,617
Claims priority, application Great Britain, Jan. 25, 1971, 3,086/71
Int. Cl. H03k 13/20
U.S. Cl. 340—347 AD 5 Claims



An analog to digital converter is disclosed having a reference signal in the form of a ramp waveform starting at a given negative potential and increasing to a given positive potential through ground or zero potential. Two amplitude comparators are provided, the first comparator producing a first output signal when the amplitude of the analog signal equals the amplitude of the ramp waveform and the second comparator producing a second output signal when the amplitude of the ramp waveform equals zero or ground potential. A counting and arithmetic arrangement responds to the first and second output signals to provide a digital output signal representative of the amplitude difference between ground potential and the amplitude of the analog signal. A polarity detector is coupled to the output of the first and second detectors and in response to the first and second output signals provide a digital bit representing the polarity of the analog signal. A storage device combines the digital output signal from the counting and arithmetic arrangement and the digital bit from the polarity detector to provide the digital output signal for the converter. Three embodiments of the counting and arithmetic arrangement are disclosed.

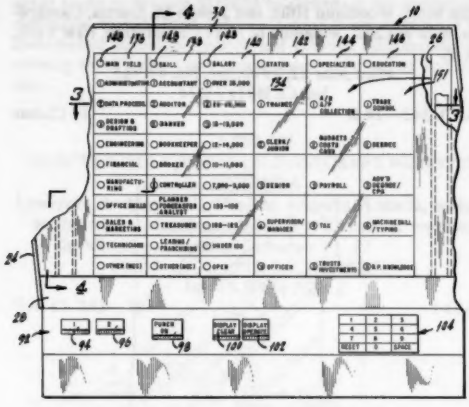
3,737,898
CONSOLE FOR RANDOM ACCESS FILING EQUIPMENT OR THE LIKE HAVING PUSH BUTTON DISPLAY

Laurence Allan Cross, Jr., Groveville, N.J., assignor to Randomatic Data Systems, Inc., Trenton, N.J.

Filed Oct. 5, 1970, Ser. No. 77,970
Int. Cl. G08b 5/36
U.S. Cl. 340—381 R 12 Claims

An operator's console for such apparatus as random access filing equipment includes a readily interchangeable, backlighted view panel marked off into individually illuminable signal selection areas. The panel is imperforate but flexible. In back of it is a bank of light-transmitting bars, one behind each area. Any one of the bars is depressible by finger pressure exerted against the corresponding, overlying area, to cause the bar to operate a switch that illuminates an associated lamp the light from which is transmitted through the bar to visibly indicate the selected area. The switches also actuate signal generating devices, so that when certain areas have been selected and illuminated as a visible indication of their selec-

tion, the signals corresponding thereto will be transmitted to the associated apparatus. If for example said apparatus is random access filing equipment, the transmitted signals may be operable to produce a coded, randomly filed card or cards corresponding to the selection made by the user.

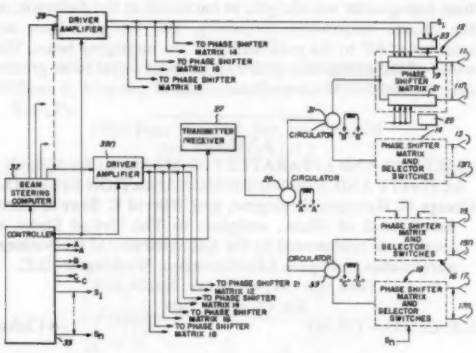


3,737,899

PHASED ARRAY ANTENNA CONTROLLER

Christos J. Georgopoulos, Lowell, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 1, 1971, Ser. No. 111,423
Int. Cl. G01s 9/02
U.S. Cl. 343—5 R **1 Claim**



A phased array antenna arrangement which includes a plurality of independently operable phased arrays is disclosed. The phase shifters in each such array are connected to appropriate ones of a set of driver amplifiers through an electronic switching arrangement which is operable as desired to permit only the phase shifters in a selected one, or selected ones, of the phased arrays to be actuated.

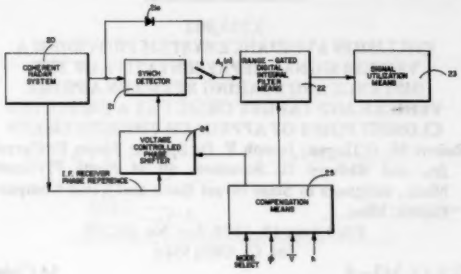
3,737,900

DIGITAL DOPPLER PROCESSOR

Charles L. Vehrs, Jr., Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 25, 1967, Ser. No. 670,363
Int. Cl. G01s 9/42
U.S. Cl. 343—7 A **9 Claims**

In a multi-mode pulsed energy system adapted for airborne operation, a range-gated doppler processor utilizing digital integral filter means. The digital integral filter means computes the power spectral density of received signals for each of a plurality of discrete doppler frequencies, corresponding to a doppler pass band of interest. Use of such digital technique allows convenient phase and frequency compensation of the doppler processor for changes in system look-angle, altitude and platform motion in a selected one of a high resolution ground mapping, squint, coherent AMTI and noncoherent AMTI mode of a multi-mode radar system.

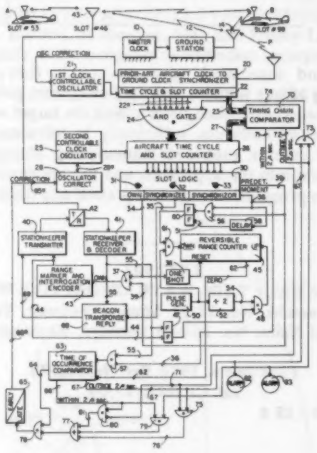


3,737,901

REDUNDANT AIRCRAFT CLOCK SYNCHRONIZATION

William V. Scott, Depew, N.Y., assignor to Sierra Research Corporation, Buffalo, N.Y.

Filed May 3, 1971, Ser. No. 139,470
Int. Cl. G01s 9/56
U.S. Cl. 343—7.5 **14 Claims**



An air traffic system in which participating aircraft occupy uniquely assigned time slots and have first time clock means which are assumed to be already finely synchronized to a ground-based master time clock by signal exchanges with ground stations and have second time keeping means in each aircraft which are synchronized first to the master time clock and are thereafter further and more finely synchronized to other aircraft nearby, to provide a desirable degree of redundancy while also remaining within the limits of the ground station imposed synchronization. Each aircraft in the illustrative embodiment selects by time-slot designation another nearby aircraft as its synchronizor, and in addition also responds to requests for synchronization by other synchronizee aircraft identified by other time-slot selection. This redundant fine synchronization among nearby synchronizor and synchronizee aircraft is especially useful in

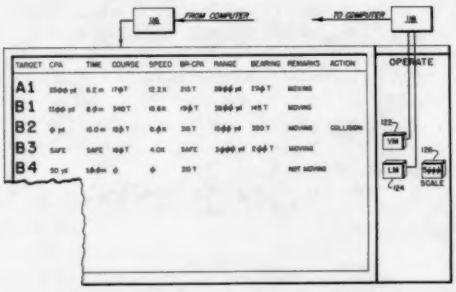
situations where large numbers of aircraft are flown close together in formations, or in groupings of commuter aircraft, for instance, in which STOL aircraft fly between cities close together, perhaps one behind the other.

3,737,902

COLLISION AVOIDANCE SYSTEM PROVIDING A VECTOR SIGNAL REPRESENTATIVE OF THE DISTANCE AND BEARING BETWEEN A PRIME VEHICLE AND TARGET OBJECT AT A PREDICTED CLOSEST POINT OF APPROACH THEREBETWEEN

Robert M. O'Hagan; Joseph F. De Spautz; James E. Carroll, Jr., and Richard H. Sorensen, all of North Plymouth, Mass., assignors to State Street Bank and Trust Company, Boston, Mass.

Filed Aug. 19, 1970, Ser. No. 65,228
Int. Cl. G01s 9/44
U.S. Cl. 343—9 **14 Claims**



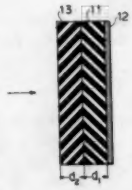
Radar and associated apparatus track the course of neighboring target vehicles and display closest points of approach between the prime vehicle and the target vehicles to signal potential collisions sufficiently in advance to avoid them, may enter a proposed maneuvering change for the prime vehicle into the apparatus, and the apparatus displays whether the proposed change will present any collision situations.

3,737,903

EXTREMELY THIN, WAVE ABSORPTIVE WALL

Kunihiro Suetake, No. 10-11 Minami 3-chome, Tokyo, and Yoshiyuki Naito, No. 261-44 Suenaga, Kawasaki, both of Japan

Filed July 6, 1970, Ser. No. 56,576
Int. Cl. H01q 17/00
U.S. Cl. 343—18 A **2 Claims**



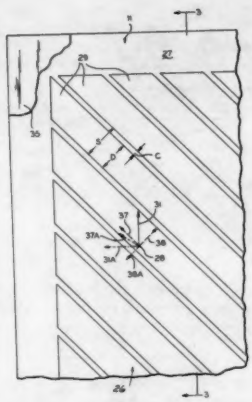
An electromagnetic wave absorbing wall employing ferromagnetic ferrite and ferroelectric material. Much thinner walls of this construction are effective shields in contrast to the thick walls of lossy materials required to achieve equivalent shielding.

3,737,904

THIN FILM POLARIZATION ROTATION MICROWAVE REFLECTORS

Hideo Mori, Woodland Hills, and Joseph M. Garcia, Camarillo, both of Calif., assignors to Abex Corporation, New York, N.Y.

Filed June 22, 1970, Ser. No. 47,985
Int. Cl. H01g 15/14
U.S. Cl. 343—18 B **11 Claims**



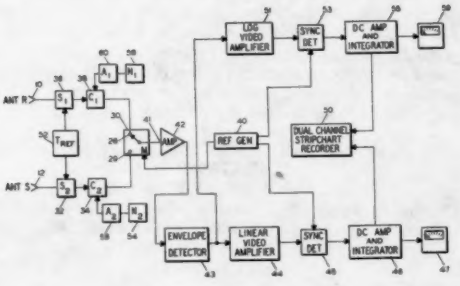
A reflector target for reflecting an impinging microwave beam with a 90° change in polarization; the target comprises a layer of high dielectric constant material having a conductive backing and having one or more thin film conductive line grids on its front surface. The thickness of the dielectric layer is less than one-quarter wavelength, as measured in the dielectric, at the chosen microwave frequency, and the grid lines are oriented at 45° to the polarization of the impinging beam. The width of the conductive grid lines is about equal to or greater than the width of the inter-line spaces.

3,737,905

METHOD AND APPARATUS FOR MEASURING SOLAR ACTIVITY AND ATMOSPHERIC RADIATION EFFECTS

George G. Haroules, Lexington, and Wilfred E. Brown, North Acton, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1970, Ser. No. 24,155
Int. Cl. H04b 7/00
U.S. Cl. 343—100 ME **4 Claims**



This disclosure describes a radiometric measuring system for observing solar activity, atmospheric attenuation and atmospheric emission. Two highly directional microwave anten-

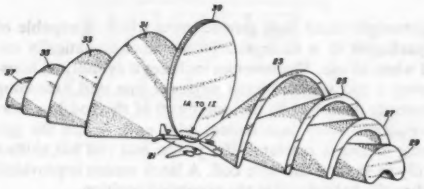
nas are mounted side-by-side on an equatorial mount which tracks the sun. One antenna is aimed directly at the sun to provide a sun temperature and the other antenna is aimed at a slight angle to the sun antenna to provide a sky temperature reference. Signals from the two antennas are compared in a radiometric detecting system and provide information concerning solar activity and atmospheric attenuation and emission.

3,737,906

ELECTRICALLY STEERABLE AIRCRAFT MOUNTED ANTENNA

Lawrence A. Maynard, Almonte, Ontario, Canada, assignor to Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence

Filed Nov. 18, 1971, Ser. No. 199,900
Int. Cl. H01q 1/28
U.S. Cl. 343—705 **7 Claims**



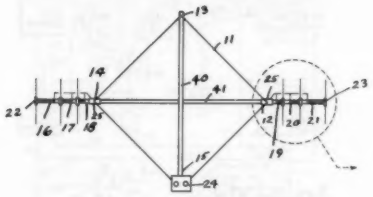
The application discloses an electronically steerable aircraft-to-satellite antenna system using a linear series of parallel dipoles fed through phase-shifting controls. By variation of the phase-shift to the various dipoles, different cones of radiation (or preferred reception) are provided. The cone axes are parallel to or coincident with the longitudinal axis of the aircraft, so that aircraft roll has little effect on the orientation of the cone.

3,737,907

MULTIBAND QUAD AND LOOP ANTENNA

Wilbert E. Monola, Erie, Pa., assignor to Mini-Products, Inc., Erie, Pa.

Filed June 30, 1971, Ser. No. 158,424
Int. Cl. H01q 11/12
U.S. Cl. 343—744 **7 Claims**



An antenna which incorporates a single four-sided radiating element or loop in conjunction with series or parallel connected loading units to cover a multiple of operating frequencies.

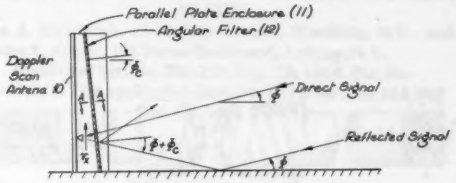
3,737,908

DOPPLER NAVIGATION BEACON SYSTEM WITH ANGULAR FILTER

Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,717
Int. Cl. G01s 1/18
U.S. Cl. 343—754 **8 Claims**

An antenna system particularly adapted for use with commutated array Doppler Navigation Beacons. Particularly in elevation determination where the Doppler array is vertically oriented, ground reflections produce multiple path errors. A fixed passive near-field microwave filter structure transmits energy from the array substantially only within an angular band on either side of a radiation normal. Parallel plate structure in the one embodiment uses a vertically extended tapered matching section within the parallel plate structure. The other embodiment employs a wire grid structure within the parallel plate structure. Both embodiments illustrated provide for angle of incidence(or radiation) sensitivity.

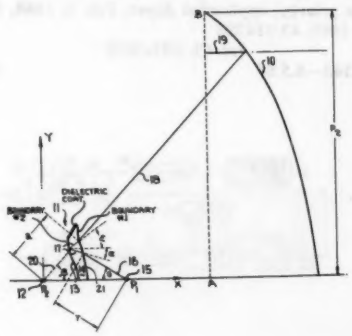


3,737,909

PARABOLIC ANTENNA SYSTEM HAVING HIGH-ILLUMINATION AND SPILLOVER EFFICIENCIES

Homer E. Bartlett, Melbourne, Fla., and Emory L. Sheppard, Morrisville, N.C., assignors to Radiation Incorporated, Melbourne, Fla.

Filed June 18, 1970, Ser. No. 47,378
Int. Cl. H01q 19/10
U.S. Cl. 343—755 **9 Claims**

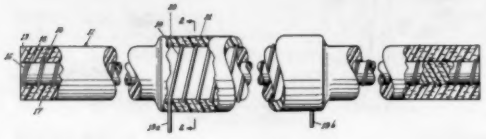


An antenna feed system which simultaneously produces nearly uniform amplitude and phase illumination as well as high spillover efficiency, in a parabolic antenna, is composed of a feed or horn source and an interposed dielectric element. The dielectric element diffracts the emitted energy to maximize the spillover and illumination efficiencies. These efficiencies are increased by configuring the surface of the interposed dielectric element. In one species the interposed element is a lens and in another is a reflector coated with dielectric material.

3,737,910
MULTIELEMENT RADIO-FREQUENCY ANTENNA STRUCTURE HAVING HELICALLY COILED CONDUCTIVE ELEMENTS

Richard J. Francis, and Clara A. Francis, both of 11855 Broad St., Pataskala, Ohio

Filed July 26, 1971, Ser. No. 165,510
Int. Cl. H01q 1/36, 1/40
U.S. Cl. 343—895 14 Claims

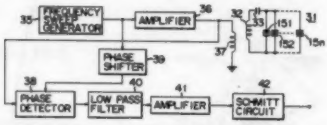


A multielement antenna for radio frequency transmission is provided having a plurality of helically formed, electrically conductive elements disposed in coaxial, longitudinally extending relationship that are structurally supported and protectively encased in a dielectric material comprising a fiberglass-reinforced synthetic resin matrix. Coupling of the helical elements through a coaxial cable to associated electronic equipment is effected by a helical conductor disposed in electromagnetically coupled relatioship to the conductive elements and which is also physically supported by a similar dielectric material reinforced with fiber glass.

3,737,911
OBJECT IDENTIFICATION SYSTEM

Johji Sakuragi, Kunitachi-shi, Tokyo, and Kazuhiko Kameda, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 794,854, Jan. 29, 1969, abandoned.
This application Aug. 17, 1970, Ser. No. 64,585
Claims priority, application Japan, Feb. 3, 1968, 43/6464; Dec. 28, 1968, 43/114288
Int. Cl. G01s 9/02
U.S. Cl. 343—6.5 SS 6 Claims

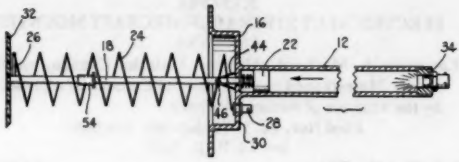


An object identification system comprising a frequency sweep generator which generates an interrogation signal to be transmitted by the transmitter; a response device, consisting of passive resonance elements, mounted on the object to be identified; a receiver for receiving the reply signals; a phase shifter connected to the output of the frequency sweep generator; phase detector which compares the output of the receiver with the phase shifter output; and the series connection of a low pass filter, amplifier, and Schmitt circuit connected to the output of the phase detector in order to detect the steep phase variation of the signal received from the object.

3,737,912
COLLAPSIBLE HIGH GAIN ANTENNA

Herbert E. Cribb, Satellite Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 16, 1971, Ser. No. 181,024
Int. Cl. H01q 1/08
U.S. Cl. 343—880 4 Claims

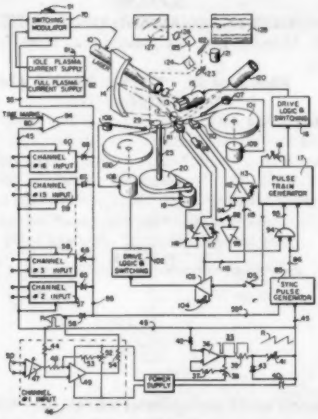


A lightweight small high gain antenna which is capable of being packaged in a collapsed form and automatically expanded when in use. The antenna includes a cylindrical housing having a rod with a piston adjacent one end extending therethrough. Attached to the outer end of the rod in a normally collapsed state is a helical wire coil. When the gas producing means is activated the piston and rod are shifted outwardly to expand the wire coil. A latch means is provided for holding the helical coil in the expanded position.

3,737,913
MULTIPLE CHANNEL DRY-PROCESS FILM RECORDER

Burnard M. Kirkpatrick, Dallas, Tex., assignor to Teledyne Industries Inc. (Geotech Division), Dallas, Tex.

Filed June 9, 1971, Ser. No. 151,210
Int. Cl. G01d 9/36
U.S. Cl. 346—34 8 Claims



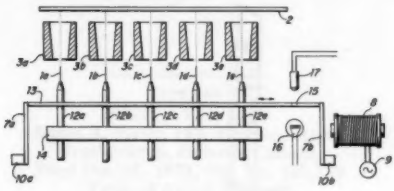
A recorder for recording on a sensitized medium multiple side-by-side traces representing input signals at plural separate input terminals, the system being illustrated by a typical embodiment in which a laser beam is focused to write upon a dry process film which is heat developed by passing the film over heaters which are servo-controlled to maintain constant surface temperature, the film being longitudinally advanced past a recording zone in which the laser beam spot is cyclically scanned transversely of the film in synchronism with a ramp signal, the multiple traces representing the various input signals all being mutually offset transversely of the film by adding progressively increasing constant pedestal voltages to the various input signals to create composite signals which are

mutually stepped to successively higher voltage levels, these voltage levels being compared for coincidence with the rising voltage of the ramp signal during each transverse scan of the laser beam spot which is shuttered "on" to mark the film each time coincidence is found.

3,737,914
LIQUID JET RECORDER

Carl Hellmuth Hertz, Skolbanksvagen 8, 223 67 Lund, Sweden

Filed Mar. 26, 1971, Ser. No. 128,278
Claims priority, application Sweden, Apr. 4, 1970, 4528/70; Germany, Sept. 15, 1970, P 20 45 617.1
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **10 Claims**

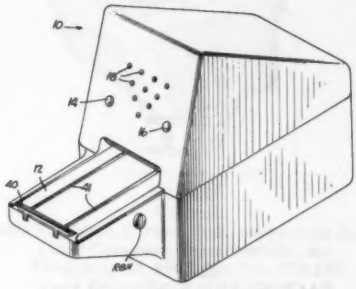


A liquid jet recording system in which an electrically conductive tracing fluid is pressure ejected through a capillary nozzle to form a jet directed toward a recording sheet. A hollow control electrode is disposed around the point of drop formation so that a large potential pulse imposed between the fluid and electrode will cause the jet to break up, thus permitting the jet to be intensity modulated. The jet nozzle is supported in an element which can be moved to vary the direction of the jet axis periodically. In one system, a group of such nozzles, mounted to provide a corresponding group of jets in a common plane, can be moved periodically together.

3,737,915
APPARATUS FOR AUTOMATIC RECORDING OF SUCCESSIVE MEASUREMENTS SUCH AS BOWLING PIN STATUS

John J. Matcovich, 65-15 38th Avenue, Woodside, N.Y., and John E. Magee, 191 Forest Boulevard, Ardsley, N.Y.

Division of Ser. No. 786,255, Dec. 23, 1968, Pat. No. 3,610,619. This application Sept. 30, 1971, Ser. No. 185,068
Int. Cl. A63d *5/04*
U.S. Cl. 346—79 **14 Claims**



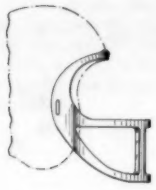
An electro-mechanical apparatus for transferring and permanently recording data indicating specific bowling pins left standing, and conversely those bowling pins knocked down, following the roll of each ball in a bowling game; this data is recorded in punched card form and is then adaptable for either manual or machine totalization.

DESIGNS

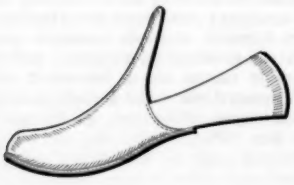
JUNE 5, 1973

227,046
FACE GUARD FOR A HELMET
Fred R. Dunning, 3800 Oakes Road,
Brecksville, Ohio 44141
Filed Jan. 3, 1972, Ser. No. 215,262
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

227,047
FACE GUARD FOR A HELMET
Fred R. Dunning, 3800 Oakes Road,
Brecksville, Ohio 44141
Filed Jan. 3, 1972, Ser. No. 215,261
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

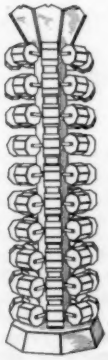


227,048
PROTECTIVE COVERING FOR A BOOT
Lilit Goldman, 325 West End Ave.,
New York, N.Y. 10023
Filed Dec. 20, 1971, Ser. No. 210,291
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278



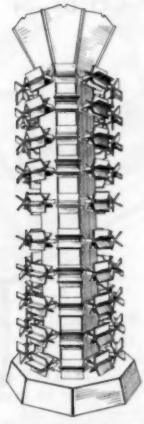
227,049
CLIMBING IRON
Floyd H. Larrabee, 13922 S. Gracebee Ave.,
Norwalk, Calif. 90650
Filed June 3, 1971, Ser. No. 149,887
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—317

227,050
DISPLAY STAND
James A. Slater, 18A Torrance Road,
Scarborough, Ontario, Canada
Filed Jan. 25, 1971, Ser. No. 109,740
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20

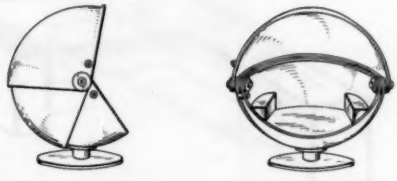


227,051
DISPLAY STAND FOR PICTURES OR THE LIKE
Jeffrey Snyder, New York, N.Y., assignor to Etna Products Co., Inc., New York, N.Y.
Filed Mar. 8, 1971, Ser. No. 122,272
Term of patent 14 years
Int. Cl. D6—*06, 07*
U.S. Cl. D6—20

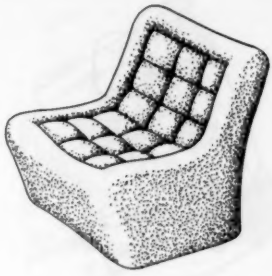
227,052
DISPLAY STAND
James A. Slater, 18A Torrance Road, Scarborough, Ontario, Canada
Filed Jan. 25, 1971, Ser. No. 109,739
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20



227,053
CHAIR
Gunter F. Ris, Oberpleis, Siegburg, Germany, assignor to Rosenthal Aktiengesellschaft, Selb, Bavaria, Germany
Filed Apr. 14, 1971, Ser. No. 134,119
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26



227,054
CHAIR OR SIMILAR ARTICLE
Hartmut Lohmeyer, Munich, Germany, assignor to Burris Manufacturing Company, Lincolnton, N.C.
Filed June 14, 1971, Ser. No. 153,153
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

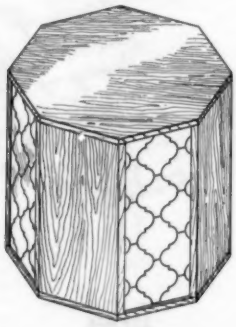


227,055
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Aug. 23, 1971, Ser. No. 174,296
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73

227,056
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed Aug. 20, 1971, Ser. No. 173,726
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73

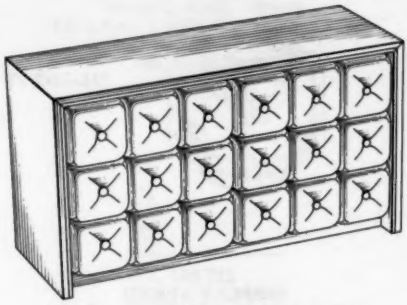
227,057
CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 24, 1971, Ser. No. 146,608
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—30

227,058
TABLE
Neil J. Maina, 3 Brighton Way, Boulder Hill, Ill. 60538
Filed May 10, 1971, Ser. No. 142,099
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—149

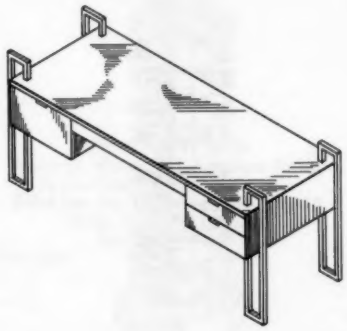


227,059
CABINET
Davis B. Allen, New York, N.Y., assignor to The General Fireproofing Company, Youngstown, Ohio
Filed Oct. 8, 1970, Ser. No. 25,384
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159

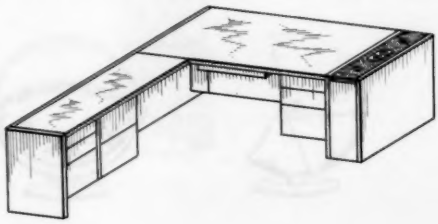
227,060
DRESSER OR THE LIKE
Leo A. Jiranek, Old Greenwich, Conn., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed Nov. 17, 1971, Ser. No. 199,842
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—160



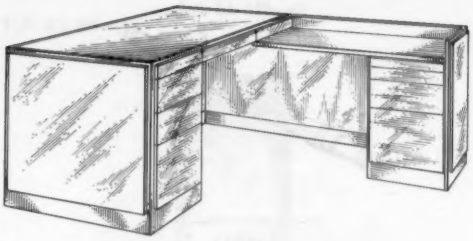
227,061
DESK OR SIMILAR ARTICLE
Sigmar E. Sobczak, P.O. Box 59410, Chicago, Ill. 60659
Filed June 9, 1971, Ser. No. 151,618
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



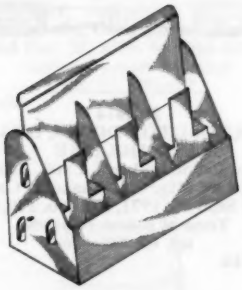
227,062
MODULAR DESK UNIT
John Nance, Quakertown, Pa., assignor to JG Furniture Co. Inc., New York, N.Y.
Original design application Dec. 29, 1970, Ser. No. 26,689. Divided and this application Apr. 14, 1972, Ser. No. 244,330
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



227,063
DESK
Davis B. Allen, New York, N.Y., assignor to The General Fireproofing Company, Youngstown, Ohio
Filed Oct. 8, 1970, Ser. No. 25,381
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162

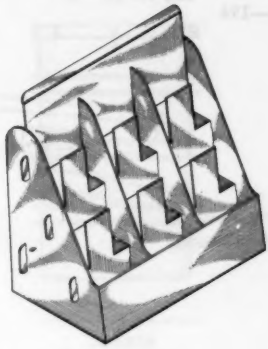


227,064
BROCHURE STAND
Paul N. Gallat, 4333 E. 10 Lane, Hialeah, Fla. 33012
Filed Dec. 9, 1971, Ser. No. 206,585
Term of patent 14 years
Int. Cl. D6—*99;* D20—*03*
U.S. Cl. D6—184

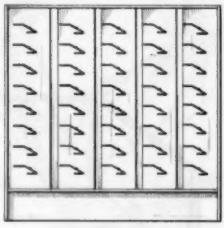


227,065
BOOKRACK
Edward M. Mayers, Hong Kong, assignor to Action-Lobeco, Imports, Ltd., Cheswick, Pa.
Filed May 24, 1971, Ser. No. 146,580
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

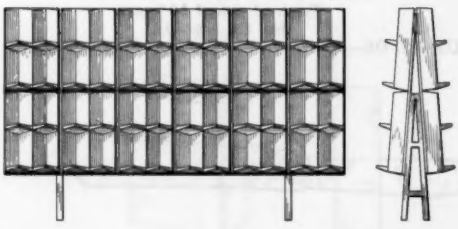
227,066
BROCHURE STAND
Paul N. Gallat, 4333 E. 10 Lane, Hialeah, Fla. 33012
Filed Dec. 9, 1971, Ser. No. 206,586
Term of patent 14 years
Int. Cl. D6—*99;* D20—*03*
U.S. Cl. D6—184



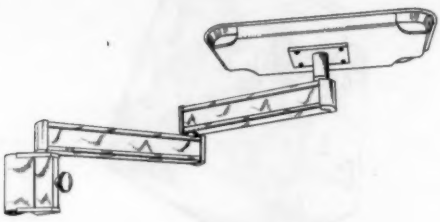
227,067
DISPLAY RACK FOR MERCHANDISE
Robert C. Young, Jr., Dallas, Tex., assignor to Volume Shoe Corporation, Topeka, Kans.
Filed June 9, 1971, Ser. No. 151,630
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



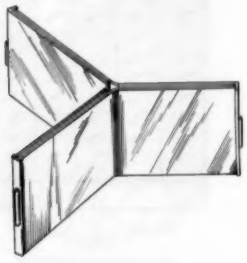
227,068
DISPLAY RACK
Hal D. Sandy, Shawnee Mission, Kans., assignor to R/Design Consultants, Inc., Kansas City, Mo.
Filed Dec. 1, 1971, Ser. No. 203,934
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190



227,069
COMBINED TRAY AND PIVOTAL ARM SUPPORT THEREFOR
Ronald C. Webb, York, Pa., assignor to Dentsply Research & Development Corporation, Wilmington, Del.
Filed Feb. 10, 1971, Ser. No. 114,407
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



227,070
DISPLAY HOLDER FOR PHOTOGRAPHS OR THE LIKE
Robert H. Dembar, Croton, N.Y., assignor to Graphicana Corporation, Ossining, N.Y.
Filed Mar. 2, 1971, Ser. No. 120,245
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



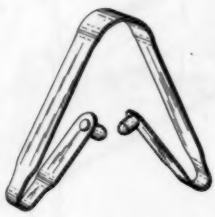
227,071
KNIFE
Sigvard Bernadotte, 8 Sodermalmstorg, 11645 Stockholm, Sweden, and Torbjorn Evrell, Box 6, 63102 Eskilstuna, Sweden
Filed Jan. 3, 1972, Ser. No. 215,289
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

227,072
CABINET PULL
Richard C. J. Palson, Medfield, Mass., assignor to P.X. Industries, Inc., Rockland, Mass.
Filed Dec. 20, 1971, Ser. No. 210,289
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

227,073
HANDLE FOR DOORS, DRAWERS, AND THE LIKE
David F. James, Redondo Beach, Calif., assignor to Heyer Hardware Mfg. Co., Anaheim, Calif.
Filed Sept. 10, 1971, Ser. No. 179,604
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

227,074
PULL HANDLE FOR DOORS, DRAWERS, AND THE LIKE
David F. James, Redondo Beach, Calif., assignor to Hyer Hardware Mfg. Co., Anaheim, Calif.
Filed Sept. 10, 1971, Ser. No. 179,606
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

227,075
TENT POLE CONNECTOR
Gordon Hampton Salt, Birmingham, England, assignor to The Hampton Works (Stampings) Limited, Birmingham, England
Filed Nov. 20, 1970, Ser. No. 26,090
Claims priority, application Great Britain May 20, 1970
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236

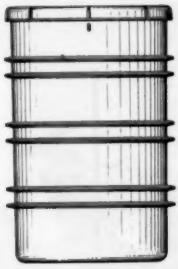


227,076
COMBINED BOTTLE AND DISPLAY CONTAINER THEREFOR
John Vincent Massey, Glencoe, and Robert Joseph Hutchcroft, Glen Ellyn, Ill., assignors to The Gillette Company, Boston, Mass.
Filed Aug. 25, 1971, Ser. No. 175,031
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12

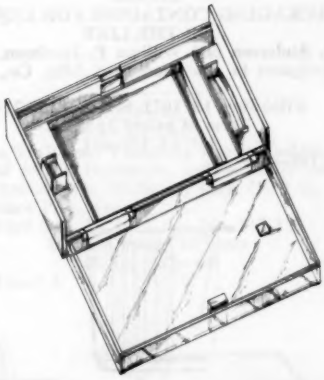
227,077
BOTTLE
Salvatore Auditore, New York, N.Y., assignor to G. Heileman Brewing Company Inc., La Crosse, Wis.
Filed Feb. 25, 1970, Ser. No. 21,605
Term of patent 14 years
Int. Cl. D9—*28*
U.S. Cl. D9—28

227,078
JUG
Richard L. Platte, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Continuation-in-part of design application Ser. No. 22,978, May 14, 1970. This application May 17, 1971, Ser. No. 144,381
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

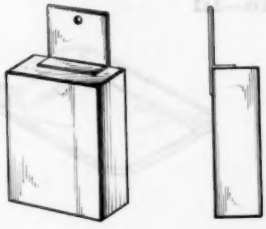
227,079
BARREL OR THE LIKE
David Lustig, 168—03 67th Ave., Flushing, N.Y. 11365
Filed Aug. 31, 1971, Ser. No. 176,777
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—170



227,080
RAZOR CASE
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed July 19, 1971, Ser. No. 164,184
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186

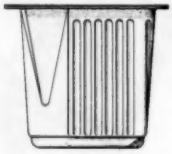


227,081
PACKAGING CONTAINER
James Alexander, Belleville, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.
Filed Feb. 9, 1971, Ser. No. 114,100
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



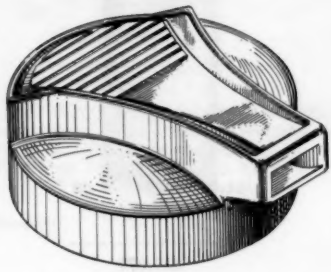
227,082
FORCING BAG FOR DECORATING PASTRY AND THE LIKE
John MacManus, 143—16 22nd Road, Whitestone, N.Y. 11357
Filed Apr. 21, 1971, Ser. No. 136,282
Claims priority, application Great Britain Jan. 7, 1971
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—194

227,083
PACKAGING CONTAINER FOR LIQUIDS OR THE LIKE
John R. Anderson and William P. Jacobson, Rockford, Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.
Filed June 18, 1971, Ser. No. 154,714
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

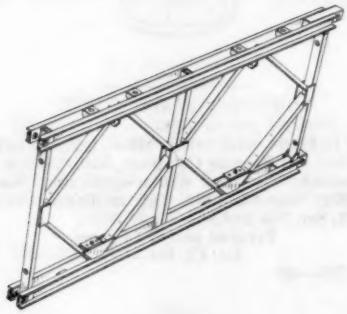


227,084
PACKAGING TRAY
Kjell Karlsen, Lilleakerveien 31, Oslo, Norway
Filed Jan. 31, 1972, Ser. No. 222,430
Claims priority, application Norway Nov. 15, 1971
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242

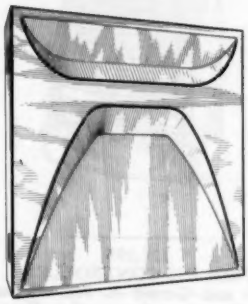
227,085
DISPENSER CAP FOR A PRESSURIZED CONTAINER
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed June 21, 1971, Ser. No. 155,402
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



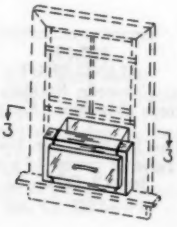
227,086
PANEL MEMBER FOR A PRE-FABRICATED
John Richard Johnson, London, England, assignor to Thos. Storey (Engineers) Limited, London, England
Filed May 10, 1971, Ser. No. 142,105
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 H



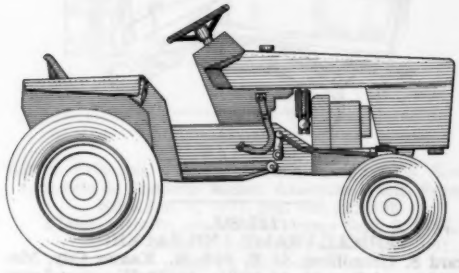
227,087
BRIDGE
SHEET METAL PANEL
Guy Charles Spoo, 18–20 Place Van Meyel, 1040 Brussels, Belgium
Filed July 14, 1971, Ser. No. 163,129
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



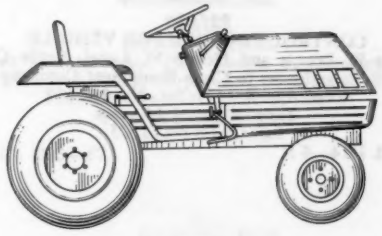
227,088
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,247
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



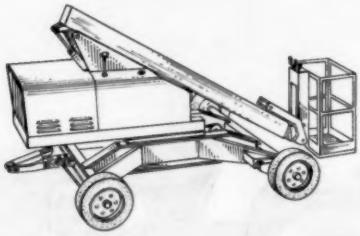
227,089
TRACTOR
Igor Kamlukin, Mequon, Nolan Rhoades, Beloit, Marc Colloton, Cedarburg, and William Lee Stevenson, Mequon, Wis., assignors to Simplicity Manufacturing Company, Inc., Port Washington, Wis.
Filed Aug. 9, 1971, Ser. No. 170,413
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3 A



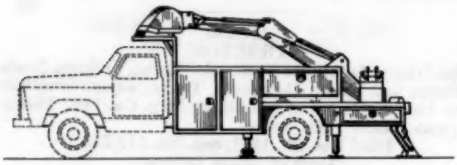
227,090
TRACTOR
Seiya Noma, Toshikado Yamasaki, Kazuo Yoshida, Norio Orito, and Mineo Horiguchi, Tokyo, Japan, assignors to Iseki Agricultural Machinery Mfg. Co. Ltd., Matsuyama, Ehime Pref., Japan
Filed Dec. 28, 1971, Ser. No. 213,238
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3 A



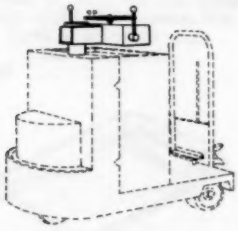
227,091
MOBILE AERIAL WORK PLATFORM
John L. Grove, Greencastle, and Paul K. Shockey, McConnellsburg, Pa., assignors to Fulton Industries, Inc., McConnellsburg, Pa.
Filed June 29, 1971, Ser. No. 158,148
Term of patent 14 years
Int. Cl. D12—*13, 09*
U.S. Cl. D14—3 R



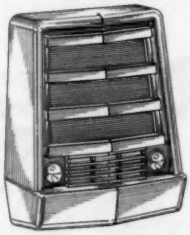
227,092
VEHICLE FRAME AND BACKHOE
Gerard S. Gremillion, 50 E. 54th St., Kansas City, Mo. 66106, and Bert M. McMillin, 10120 Wenonga Lane, Leawood, Kans. 66206
Filed Mar. 19, 1971, Ser. No. 126,400
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3 R



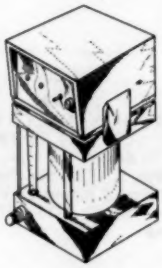
227,093
CONTROL CONSOLE FOR VEHICLE
Warner K. Brown and Dennis M. Lanci, Battle Creek, Mich., assignors to Clark Equipment Company
Filed Apr. 8, 1971, Ser. No. 132,461
Term of patent 14 years
Int. Cl. D12—*14, 05*
U.S. Cl. D14—6 P



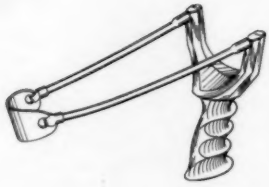
227,094
TRACTOR GRILL HOUSING OR SIMILAR ARTICLE
Robert A. Skyer and Mitchell E. Kolak, Palatine, and Harry R. Wilson and Joseph H. Konefes, Libertyville, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Apr. 16, 1971, Ser. No. 134,930
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—18 A



227,095
PROCESS CONTROLLER
David J. Kelch and Gerald A. Jensen, Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 16, 1972, Ser. No. 235,473
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C



227,096
SLING SHOT
Charles E. Jones, Colorado Springs, Colo., assignor to Colorado Springs Machine Corporation, Colorado Springs, Colo.
Filed Jan. 14, 1972, Ser. No. 218,053
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—4

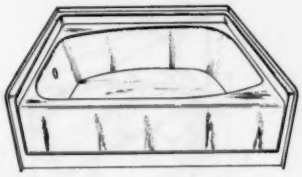


227,097
ARCHERY BOW HANDLE
William R. Stewart and Lonnie P. Griggs, Jacksonville, Tex., assignors to AMF Incorporated, New York, N.Y.
Filed June 1, 1971, Ser. No. 149,092
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5

227,098
BOW HANDLE
Jack K. Wilson, Norman E. Wilson, and Robert S. Wilson, all of Rte. 8, Box 33–H, Springfield, Mo. 65804
Filed May 4, 1972, Ser. No. 250,476
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5

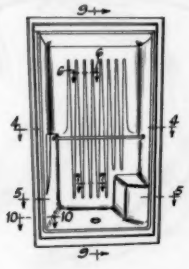
227,099
GUN HOLSTER
Harold A. Barrow, 1612 Cynthia Drive, Rockford, Ill. 61107
Continuation-in-part of design application Ser. No. 129,305, Mar. 29, 1971. This application Mar. 1, 1972, Ser. No. 231,072
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—13

227,100
BATHTUB
Harold D. Weiss, 56 Dorian Way, San Rafael, Calif. 94901
Filed Jan. 17, 1972, Ser. No. 218,646
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

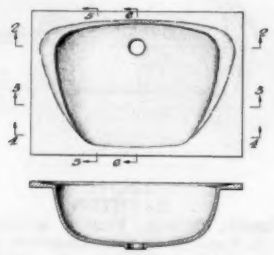


227,101
BATHTUB
Andre Primault, Noyon, France, assignor to Societe Generale de Fonderie Societe Anonyme, Paris, France
Filed Jan. 6, 1972, Ser. No. 215,992
Claims priority, application France Sept. 2, 1971
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

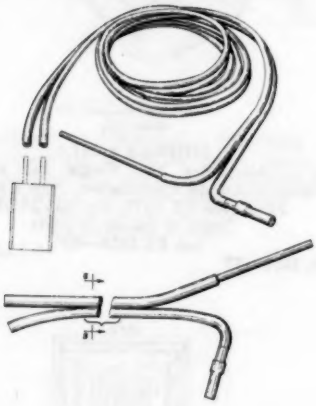
227,102
SHOWER STALL
Fred C. Alexander, New Castle, Pa., assignor to Universal-Rundle Corporation, New Castle, Pa.
Filed June 23, 1971, Ser. No. 156,161
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



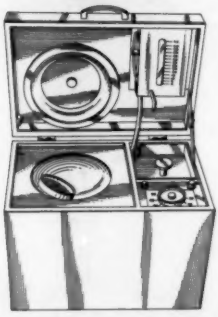
227,103
LAVATORY BASIN
Wayne M. Lippert, 2615 N. 75th St., Milwaukee, Wis. 53215, and William L. Lippert, 398 Wildwood Ridge, Colgate, Wis. 53017
Filed Mar. 16, 1971, Ser. No. 125,001
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



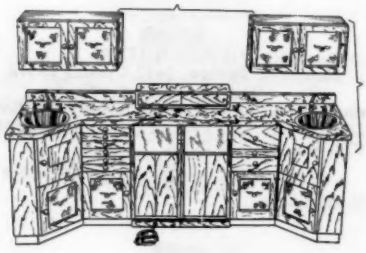
227,104
DOUBLE TUBING UNIT FOR A WATER COOLED DENTAL IMPRESSION TRAY
Peter L. Johnson, Bernardsville, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 15, 1972, Ser. No. 235,095
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 A



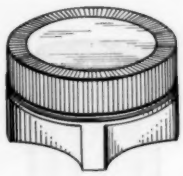
227,105
DENTAL LABORATORY MIXING MACHINE
Alan David Ellies, Frederick M. Hill, and James H. Murray, Columbus, Ohio, assignors to The Columbus Dental Manufacturing Company, Columbus, Ohio
Filed Aug. 18, 1972, Ser. No. 281,710
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 A



227,106
DENTAL OPERATORY
Ronald C. Webb, Red Lion, and Kenneth B. Wikel, York, Pa., assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Continuation of design applications Ser. No. 117,171, 117,185, 117,186, 117,187, and 11788, all Feb. 19, 1971. This application Apr. 13, 1972, Ser. No. 243,917
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B

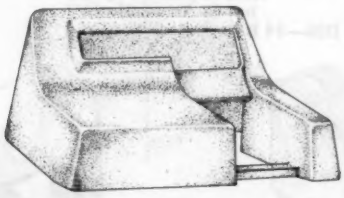


227,107
CONTAINER FOR DENTAL RESTORATIVES
Arnold L. Bereson, Kendall Park, and Michael F. Fuhrman, Trenton, N.J., assignors to Johnson & Johnson
Filed Jan. 28, 1972, Ser. No. 221,858
Term of patent 14 years
Int. Cl. D24—*99*; D9—*01*
U.S. Cl. D24—1 R

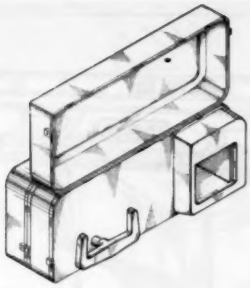


227,108
TOILET TRAINER
Simeon L. Halenar, 11409 S. King Drive, Chicago, Ill. 60628
Filed June 7, 1972, Ser. No. 260,708
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

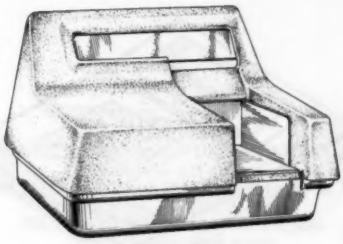
227,109
UPPER HOUSING FOR A TEST SCORING MACHINE
Perry Hall Rosen and Roy E. Seymour, Beaverton, and Walter James Sirois, Sherwood, Oreg., assignors to Automata Corporation, Richland, Wash.
Filed June 4, 1971, Ser. No. 150,259
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D25—1 R



227,110
PORTABLE AIRPLANE FLIGHT SIMULATOR TRAINER
Harry E. Cramer and Steven F. Cramer, both of 7609 S. Laurel St., Seattle, Wash. 98178
Filed Dec. 8, 1971, Ser. No. 206,243
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

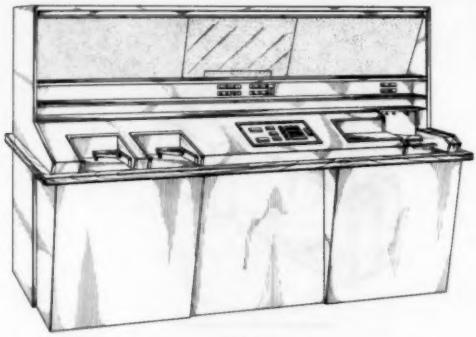


227,111
HOUSING FOR AN ELECTRONIC TEST SCORING MACHINE
Perry Hall Rosen and Roy E. Seymour, Beaverton, and Walter James Sirois, Sherwood, Oreg., assignors to Automata Corporation, Richland, Wash.
Filed June 4, 1971, Ser. No. 150,261
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D25—1 R

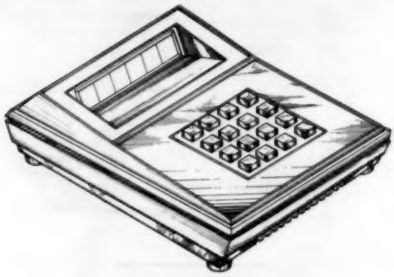


227,112
SELF AUDIO MONITOR FOR SPEECH THERAPY
Claude M. Baldwin, 3400 Whitesburg Drive, Huntsville, Ala. 35802
Filed Jan. 26, 1972, Ser. No. 221,128
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D26—1 R

227,113
CHECK READER
Frank Burroughs, Kensington, Md., and Robert Springer, Woodbridge, Va., assignors to Optical Recognition Systems, Incorporated, Reston, Va.
Filed Apr. 19, 1971, Ser. No. 135,538
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



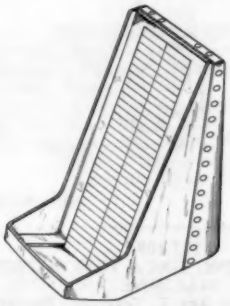
227,114
COMPUTER TERMINAL OR THE LIKE
Charles T. Inatomi, Culver City, Calif., assignor to TRW Data Systems, Inc., Torrance, Calif.
Filed Mar. 9, 1972, Ser. No. 233,390
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



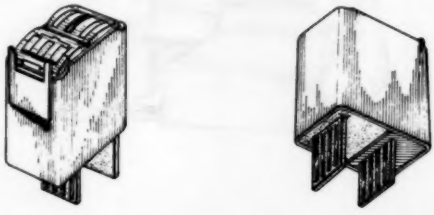
227,115
COMPUTER TERMINAL
Robert J. Abbott, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed July 24, 1972, Ser. No. 274,701
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

227,116
SPEAKER BOX
Kazuhisa Sato, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of design applications Ser. No. 25,416, 25,417, and Ser. No. 25,418, all Oct. 9, 1970, all now abandoned. This application Nov. 4, 1971, Ser. No. 195,901
Claims priority, application Japan Apr. 11, 1970; Apr. 15, 1970; Apr. 21, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

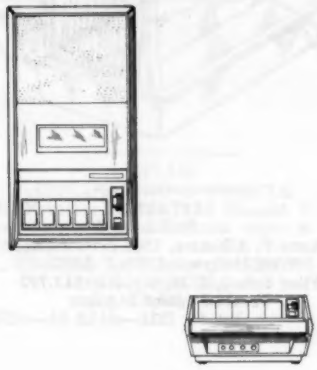
227,117
STAND FOR A TELEPHONE INSTRUMENT
Carl-Arne Breger, Malmo, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Original design application Mar. 31, 1971, Ser. No. 130,063. Divided and this application May 31, 1972, Ser. No. 258,483
Claims priority, application Sweden Oct. 1, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



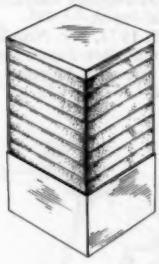
227,118
MAGNETIC HEAD FOR TAPE RECORDERS
Hiroshi Muraoka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Ohtaku, Tokyo, Japan
Filed Dec. 16, 1971, Ser. No. 209,006
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D26—14 B



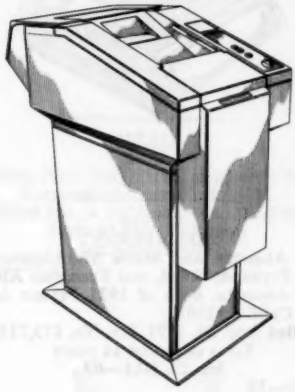
227,119
CASSETTE TAPE RECORDER
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company
Filed Dec. 27, 1971, Ser. No. 212,886
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



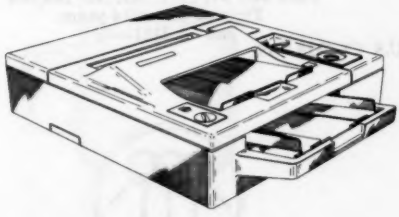
227,120
MULTI-DIRECTIONAL SPEAKER
Wilfried Schneider, 59 Perivale Crescent, Scarborough, Ontario, Canada
Filed Dec. 23, 1971, Ser. No. 211,851
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



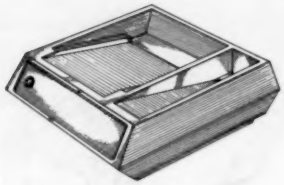
227,121
FACSIMILE TRANSCEIVER APPARATUS
Larry D. Harrison, Clifton Springs, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 8, 1972, Ser. No. 251,578
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 R



227,122
FACSIMILE TRANSCEIVER APPARATUS OR SIMILAR ARTICLE
Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 8, 1972, Ser. No. 251,498
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 R



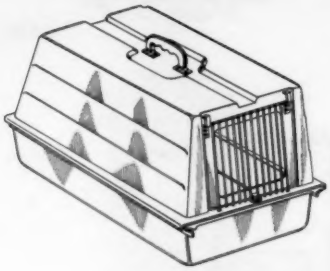
227,123
BATTERY CHARGER
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Feb. 22, 1972, Ser. No. 228,436
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



227,124
MEDALLION
Esteban H. Abenoza and Maria M. Abenoza, both of 1620 San Fernando Road, and Fernando Abenoza and Linda C. Abenoza, both of 1921 Peyton Ave., all of Burbank, Calif. 91504
Filed Aug. 20, 1971, Ser. No. 173,715
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—19

227,125
MEDALLION
Elaine J. Papavasiliou, Shoreham, N.Y., assignor to Symbologics, Inc., Port Jefferson, N.Y.
Filed July 21, 1971, Ser. No. 164,964
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—19

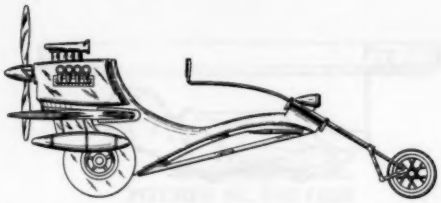
227,126
ANIMAL CARRYING CASE
Robert L. Brison, Glendora, Calif., assignor to Whittaker Corporation
Filed Aug. 23, 1971, Ser. No. 174,288
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



227,127
DOLL
Aune F. Albanese, 7561 NW. 1st St., West Hollywood, Fla. 33024
Filed Feb. 8, 1971, Ser. No. 113,792
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 C

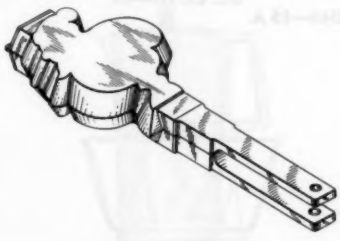
227,128
VELOCIPEDE
Kotaro Hata, Nara, and Sigeru Morita, Sigeru Kubota, Katsuji Kagayama, and Tsunemitsu Yaso, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Osaka, Japan
Filed Mar. 15, 1972, Ser. No. 235,112
Claims priority, application Japan Sept. 17, 1971
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15 AL

227,129
TOY MOTOCYCLE
Donald J. Maurer, Torrance, and Eugene T. Daniel, Walnut, Calif., assignors to Monogram Models, Inc., Morton Grove, Ill.
Filed Aug. 31, 1972, Ser. No. 285,148
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



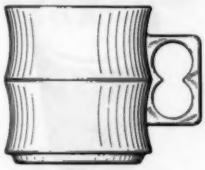
227,130
CHILD'S RIDING VEHICLE
Francis E. Pavolko, Albion, and Donald V. Godfrey, Fairview, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed May 3, 1972, Ser. No. 250,109
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

227,131
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 7, 1972, Ser. No. 224,373
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 J

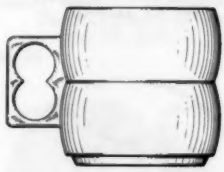


227,132
PAN FOR COOKING BACON
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Oct. 15, 1971, Ser. No. 189,809
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 J

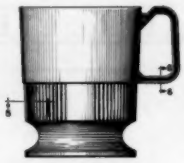
227,133
CUP
Gerald Gulotta, New York, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,270
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 A



227,134
CUP
Gerald Gulotta, New York, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,271
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 A



227,135
MUG
Paul Davis, Swampscott, Mass., and Clara Virginia Eicholtz, Midland, and Bertrand N. Trombley, Birmingham, Mich., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Jan. 28, 1972, Ser. No. 221,850
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 A

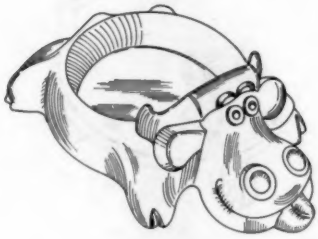


227,136
GOBLET
Adolf Kies, 8903 Balboa Blvd., Northridge, Calif. 91324
Filed Feb. 14, 1972, Ser. No. 226,389
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9 B

227,137
PLATE
John T. Dolby, Winnetka, and James S. Adler, Chicago, Ill., assignors to Standard Oil Company
Filed Dec. 14, 1970, Ser. No. 26,472
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 A

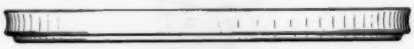
227,138
BEVERAGE GLASS COASTER
Jeffrey S. Snyder, 535 E. 86th St., New York, N.Y. 10021
Filed May 22, 1972, Ser. No. 255,926
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 D

227,139
SERVING TRAY FOR HAMBURGERS OR THE LIKE
Ronald D. Niven, Chicago, Ill., assignor to Dynagraphic Merchandising Corporation, Chicago, Ill.
Filed Jan. 3, 1972, Ser. No. 215,256
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 E



227,140
SERVING DISH OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 7, 1971, Ser. No. 178,547
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A

227,141
PLATE
Gerald Gulotta, New York, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,272
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 K



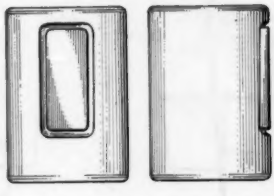
227,142
PITCHER OR THE LIKE
James B. Swett, Barrington, R.I., and Robert F. Bateman, St. Paul, Minn., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 9, 1971, Ser. No. 122,642
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21 R

227,143
COFFEEMAKER
Julian R. Haynes, Hinsdale, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Dec. 16, 1971, Ser. No. 208,516
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26 A

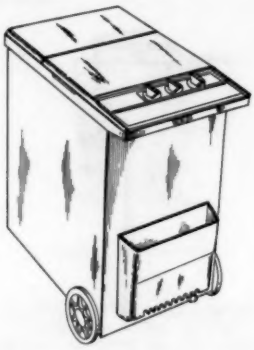
227,144
MOISTURE INJECTOR-BASTER
Anthony W. Chiechi, 828 Di Fiore, Apt. 1, San Jose, Calif. 95128
Filed Sept. 20, 1971, Ser. No. 182,277
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—29 G

227,145
CHARM
David L. Corbisier, 1092 N. Lincoln St., Orange, Calif. 92667
Filed Feb. 25, 1972, Ser. No. 229,626
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—17

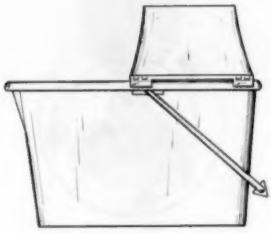
227,146
TABLE LIGHTER
Dieter Rams, Konigstein, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Mar. 25, 1970, Ser. No. 21,941
Claims priority, application Germany Oct. 13, 1969
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



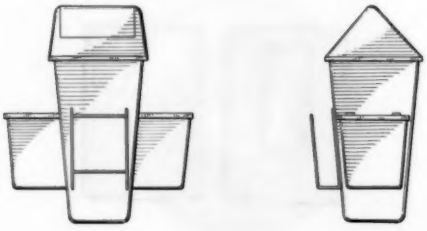
227,147
ELECTRIC WASHER
Kiyoshi Fujii, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Mar. 17, 1971, Ser. No. 125,458
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—1 A



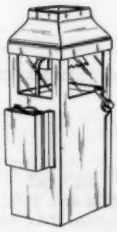
27,148
COMBINED SCRUB PAIL AND MOP SQUEEZER
David B. Oas, S. Creek Road, R.D. 1, Girard, Pa. 16417
Filed July 13, 1970, Ser. No. 23,910
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—29



227,149
TRASH RECEPTACLE
Loryn B. Deane and Edward V. Deane, both of 18 Overlook Road, Ardsley, N.Y. 10502
Filed Feb. 23, 1972, Ser. No. 228,786
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—32



227,150
COLLECTION BOX
Theodore R. Einke, Euclid, Ohio, assignor to The Euclid Products Co., Inc., Willoughby, Ohio
Filed June 9, 1971, Ser. No. 151,608
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—4 R



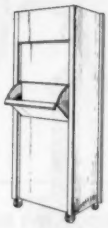
227,151
DRAWING COMPASS
Robert Welch, Chipping Campden, England, assignor to W. J. Harris (Birmingham) Limited, Stafford, England
Filed Jan. 11, 1971, Ser. No. 105,774
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D52—6 B

227,152
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida, Ltd., Oneida, N.Y.
Filed Dec. 20, 1971, Ser. No. 210,293
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 R

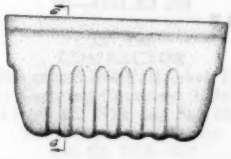
227,153
SPAGHETTI FORK
Robert A. Balow, Eau Claire, Wis., assignor of a fractional part interest to Francis D. Hurd, Glen Ellyn, Ill.
Filed Sept. 15, 1971, Ser. No. 180,957
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

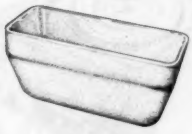
227,154
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, 306 N. McBride St., Syracuse, N.Y. 13203
Filed Jan. 24, 1972, Ser. No. 220,560
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12 R

227,155
TRASH COMPACTOR CABINET
Floyd R. Gladwin, 21000 E. River Road, Grosse Ile, Mich. 48138
Continuation-in-part of design application Ser. No. 18,897, Aug. 28, 1969. This application Apr. 5, 1971, Ser. No. 131,577
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B

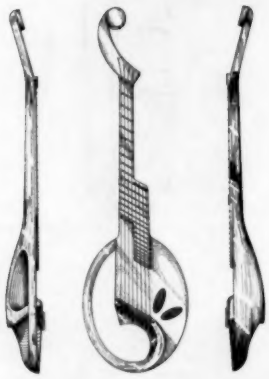


227,156
BUCKET FOR A BUCKET ELEVATOR
Fritz A. Callies, Menomonee Falls, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Sept. 3, 1971, Ser. No. 177,911
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D55—1 C





227,157
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Sept. 20, 1971, Ser. No. 182,279
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



227,158
RADIO-PHONOGRAPH OR SIMILAR ARTICLE
Ken Okabe and Nara Hiroaki Yazawa, Yamatokoriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1971, Ser. No. 131,839
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

227,159
COMBINED TELEVISION AND RADIO RECEIVER
Shinji Ikeya and Hiromitsu Natsume, Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed June 28, 1971, Ser. No. 157,795
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

227,160
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Mar. 1, 1972, Ser. No. 231,084
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

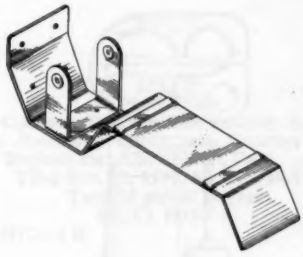
227,161
EYEGLASS FRAME FRONT
Howell S. Jobbins, Jr., Warwick, R.I., assignor to Universal Optical Company, Inc., Providence, R.I.
Filed Dec. 6, 1971, Ser. No. 205,437
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

227,162
EYEGLASS FRAME FRONT
Howell S. Jobbins, Jr., 24 Superior, Warwick, R.I. 02886
Filed Dec. 6, 1971, Ser. No. 205,438
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

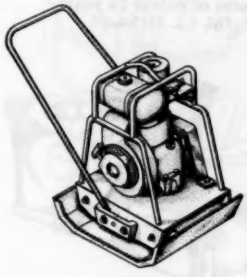
227,163
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 16, 1971, Ser. No. 124,997
Term of patent 7 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

227,164
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 16, 1971, Ser. No. 125,004
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

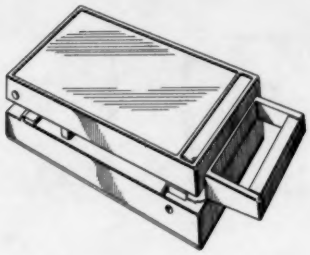
227,165
ROLL HOLDER FOR DISPENSING SANDPAPER
Herman Gordon, 1315 Wright Drive, Huntingdon Valley, Pa. 19006
Filed Nov. 16, 1970, Ser. No. 26,004
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D59—2 A



227,166
COMPACTOR
Eugene C. Briggs and Lee E. Reichel, Dayton, Ohio, assignors to Koehring Company, Milwaukee, Wis.
Filed Sept. 15, 1971, Ser. No. 180,933
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D60—1

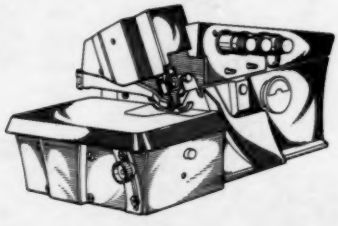


227,167
DATA RECORDER
John A. Maul, Cuyahoga County, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed May 28, 1971, Ser. No. 148,301
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11

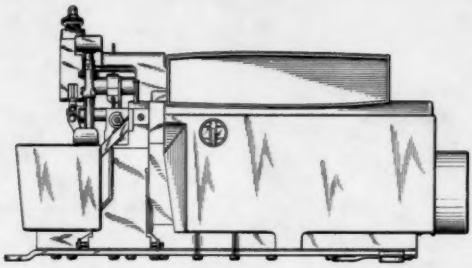


227,168
SUMP PUMP
David O. Chase and Martin V. Maloney, Skaneateles, N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Apr. 6, 1972, Ser. No. 241,878
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R

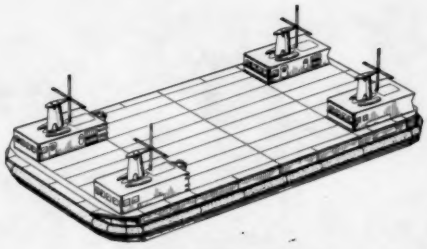
227,169
SEWING MACHINE
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy
Filed Aug. 2, 1971, Ser. No. 168,513
Claims priority, application Italy Feb. 11, 1971
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



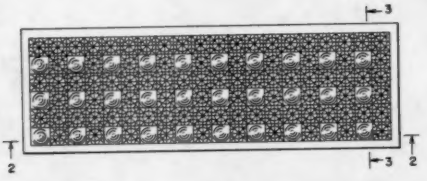
227,170
SEWING MACHINE
James H. Sullivan, Lake Forest, Ill., assignor to Union Special Machine Co., Chicago, Ill.
Filed Apr. 17, 1972, Ser. No. 245,049
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



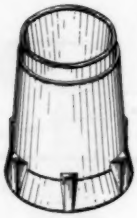
227,171
AIR CUSHION VEHICLE
Raymond Leslie Wheeler, Old Road, East Cowes, Brovacum, Isle of Wight, England
Filed Aug. 23, 1971, Ser. No. 174,307
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 M



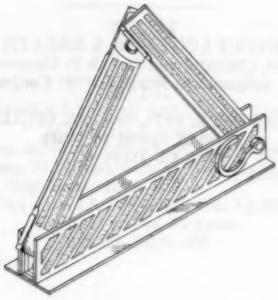
227,172
COMBINED REFLECTOR AND LENS
Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Esna Corporation, New York, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,521
Term of patent 14 years
Int. Cl. D29—*02*; D26—*05*
U.S. Cl. D72—1 E



227,173
TRAFFIC MARKER
Howard Bryan Carter, Scarborough, Ontario, Canada, assignor to Rosedale Plastics (Containers) Limited, Toronto, Ontario, Canada
Filed Oct. 27, 1971, Ser. No. 193,240
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H



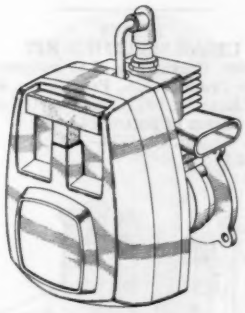
227,174
VEHICLE SAFETY SIGNAL
Katie Adams, Box 271, Ketchum, Idaho 83340
Filed Mar. 31, 1972, Ser. No. 240,322
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H



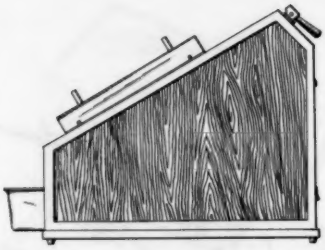
227,175
TAPE DISPENSER
Henry Finkel, Montreal, Quebec, Canada, assignor to Arrow Tape Industries Inc., Lachine, Quebec, Canada
Filed Jan. 31, 1972, Ser. No. 222,463
Claims priority, application Canada Oct. 26, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 B

227,176
DESK STAND
Lester Kenneth Franklin, 23 Repulse Bay Road, Apt. 10–A, Hong Kong
Filed Nov. 8, 1971, Ser. No. 196,880
Claims priority, application Great Britain May 5, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A

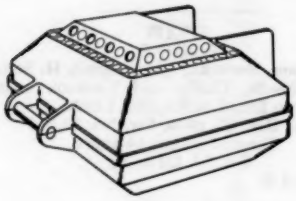
227,177
ENGINE
Cecil T. Cookson, Burbank, and Kenneth H. Seitz, Palos Verdes Peninsula, Calif.; said Cookson assignor to O & R Engines, Inc., Los Angeles, Calif.
Filed Dec. 21, 1970, Ser. No. 26,612
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 R



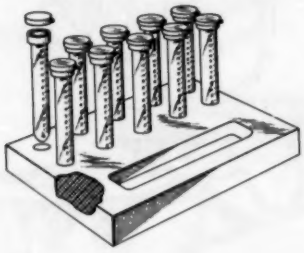
227,178
COOKING GRILL
Roland L. Duning, Indianapolis, Ind., assignor to Burger Chef Systems, Inc. (BC), Indianapolis, Ind.
Filed Mar. 26, 1971, Ser. No. 128,640
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



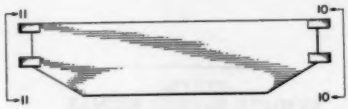
227,179
PORTABLE COOKING GRILL
Jim R. Grafton, 1112 34th Ave., Moline, Ill. 61265; Glenn E. Wilkins, 3722 Forrest Road, Davenport, Iowa 52804; and Joseph F. Murphy, 1106 25th Avenue Court, Moline, Ill. 61265
Filed Feb. 25, 1971, Ser. No. 119,071
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10 G



227,180
URINE SPECIMEN KIT
David L. Brodsky, Providence, R.I., assignor to Superior Plastic Products Co., Providence, R.I.
Filed June 21, 1971, Ser. No. 155,401
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 U

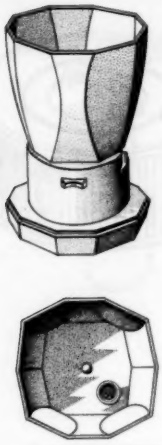


227,181
STRETCHER BARRIER
Bernard E. Shaw, 6732 Colonville Road E., Clare, Mich. 48617
Filed Apr. 21, 1971, Ser. No. 136,297
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

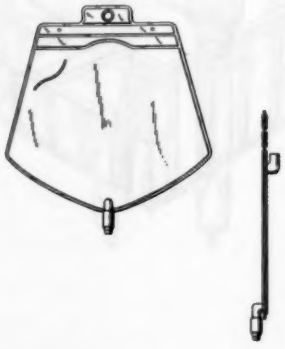


227,182
BREATH INPUT UNIT FOR A BREATH TESTER
Samuel Shiber, Chicago, and Joseph P. Hoppesch, Streamwood, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 8, 1971, Ser. No. 187,723
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 N

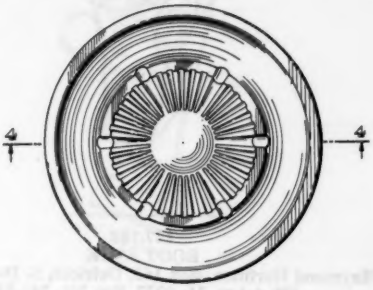
227,183
ELECTRIC DOUCHE
Eloise McCarthy Kenner, Miami, Fla., assignor to Hahn Laboratories, Inc., Miami, Fla.
Filed May 24, 1971, Ser. No. 146,584
Term of patent 3½ years
Int. Cl. D24—*04*
U.S. Cl. D83—1 P



227,184
PEDIATRIC URINARY DRAINAGE BAG OR SIMILAR ARTICLE
Frank William Stevens, Rutherford, and Samuel Dochung Han, Leonia, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed June 18, 1968, Ser. No. 12,409
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 U

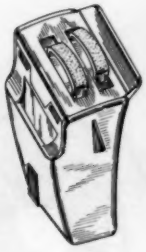


227,185
ASH TRAY
Robert W. Minners, Greenwich, Conn., assignor to Minners and Co., Inc., New York, N.Y.
Filed Sept. 14, 1971, Ser. No. 180,542
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H

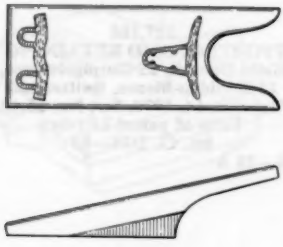


227,186
WIG SUPPORTING AND RETAINING STAND
Kathi Dangeli, 25 Gurnigelstrasse, 2560 Nidau-Bienne, Switzerland
Filed Oct. 14, 1970, Ser. No. 25,483
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A

227,187
CALLOUS REMOVER
Richard Ihasz, Stratford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 21, 1971, Ser. No. 155,405
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 C

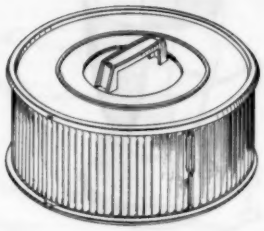


227,188
BOOT JACK
Raymond Hartman, Box 163, Oelrichs, S. Dak. 57763
Filed Apr. 21, 1972, Ser. No. 246,518
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10 D

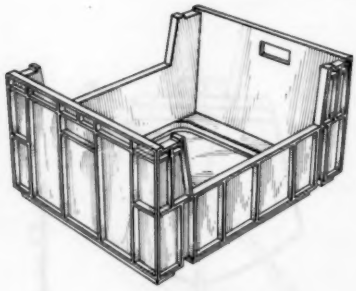


227,189
HAIR STRAIGHTENING IRON
John Cusenza, 5334 Lindley, Encino, Calif. 91316
Filed Mar. 10, 1972, Ser. No. 233,870
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E

227,190
CONTAINER FOR TAPE CASSETTES
Kevin P. McKinsey, Northfield, and Thomas C. Mills, Wheaton, Ill., assignors to Double Sixteen Company
Filed Dec. 17, 1970, Ser. No. 26,542
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D

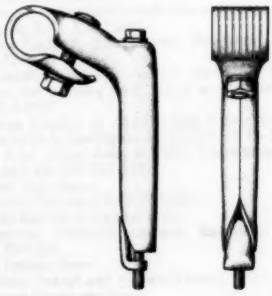


227,191
MEAT HANDLING TRAY OR SIMILAR ARTICLE
Donald P. Cape, Crystal Lake, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Aug. 12, 1971, Ser. No. 171,412
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



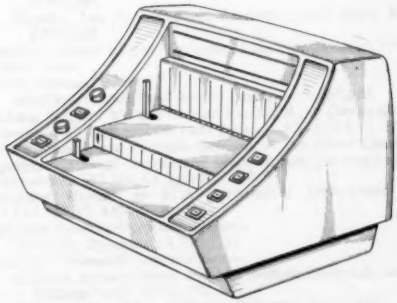
227,192
KEY HOLDER
Herman J. Schafhauser, 536 N. Parker Ave., Indianapolis, Ind. 46201
Filed Jan. 17, 1972, Ser. No. 218,639
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—8

227,193
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Continuation-in-part of abandoned design applications Ser. No. 22,178, and Ser. No. 22,179, both Apr. 1, 1970. This application Nov. 5, 1970, Ser. No. 109,068
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—9



227,194
TAG HOLDER
Donald M. Palmer, 2627 E. 68th Ave., Portland, Oreg. 97206
Filed May 17, 1971, Ser. No. 144,395
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—243

227,195
MACHINE FOR BINDING BOOKS
William H. Abildgaard, Los Altos Hills, and Charles T. Groswith III, Los Altos, Calif., Logan W. Johnson, Lake Minnetonka, Minn., and David R. Estes, Mountain View, Calif., assignors to Abildgaard Laboratories, Inc., Mountain View, Calif.
Filed Sept. 7, 1971, Ser. No. 178,540
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—1



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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Laboratories: *See—*
Flouret, George Rogelio, 3,737,422.
Plotnikoff, Nocholas Peter, 3,737,549.

Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Gocho, Sinobu, to Toyo Jozo Kabushiki Kaisha. Process for production of enzyme alkaline dextranase. 3,737,383, Cl. 195-62.000.

Abe, Toshiro: *See—*
Kojima, Kiyoshi; and Abe, Toshiro, 3,737,803.

Abegg, Jean-Louis: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; de Beaulieu, Henri Philippe; and Abegg, Jean-Louis, 3,736,944.

Abele, Manfred: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,737,438.

Abex Corporation: *See—*
Mori, Hideo; and Garcia, Joseph M., 3,737,904.

Abraham, Erich E. Rotary engine. 3,737,248, Cl. 415-198.000.

Ackley, Donald M.: *See—*
Rosales, Joseph G., 3,737,202.

Adams, David K.; and Ho, Y.-C., to Stanford Research Institute. Loss cancelling resonator and filters. 3,737,801, Cl. 331-53.000.

Adams, Jim Mills; and Grimmell, William Charles, to Hoffmann-La Roche, Inc. Machine color recognition. 3,737,239, Cl. 356-177.000.

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Bates, Darwin S.; and Szymanski, Edward R., 3,736,867.
See, Gary G., 3,737,629.
Tregerman, Leon; and Brindle, Stanley M., 3,737,868.

Adelmann, Hans-Jurgen: *See—*
Mangold, Hans; and Adelmann, Hans-Jurgen, 3,737,775.

Ader, Gary B.: *See—*
Check, Donald R.; Ader, Gary B.; and Pauls, Edward A., 3,736,612.

Adickes, Cecil F.: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,737,077.

Advanced Research Corporation: *See—*
Turner, Loyce A.; and Rollor, Edward A., Jr., 3,737,858.

Aelony, David: *See—*
Throckmorton, Peter E.; Aelony, David; Egan, Richard R.; and Otey, Felix H., 3,737,426.

Aerojet-General Corporation: *See—*
Rudy, Erwin, 3,737,289.

AFCO Manufacturing Corporation: *See—*
Foon, Alvin N., 3,737,134.

African Explosives and Chemical Industries Limited: *See—*
Stander, Cornelius Marthinus; and Hughes, David Owen, 3,737,491.
Stander, Cornelius Marthinus; and Hughes, David Owen, 3,737,492.

Agence Nationale de Valoresation de La Recherche: *See—*
Walter, Marc, 3,736,739.

Agfa-Gevaert Aktiengesellschaft: *See—*
Wagner, Karl, 3,737,240.
Wick, Richard; Bestenreiner, Friedrich; and Deml, Reinhold, 3,737,574.

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Murton, Crawford B., 3,737,489.

Aisin Seiki Kabushiki Kaisha: *See—*
Okamoto, Toshiaki; Kuwana, Kazutaka; and Sato, Takefumi, 3,737,201.

Aizawa, Tatsuo: *See—*
Washio, Takaji; and Aizawa, Tatsuo, 3,737,159.

Akron Brass Company: *See—*
Boecker, Allan J., 3,737,133.

Aktiebolaget Bofors: *See—*
Andersson, John-Erik, 3,736,795.

Aktiebolaget Volvo: *See—*
Ahlen, Dan Ragnar, 3,736,617.

Akzona Incorporated: *See—*
Van Den Broek, Albertus Joannes, 3,737,427.

Alarm Products International, Inc.: *See—*
Parlato, Philip J., 3,737,591.

Albar Corporation: *See—*
Kreider, Benjamin A.; Jones, William R.; Metalsky, William J.; and Gibb, Thomson B., 3,737,553.

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Von Brachel, Hanswilli; and Aldebert, Friedrich, 3,737,437.

Aldenhoven, Chislanus Matheus Anthonius Maria, to U.S. Philips Corporation. Tape recorder control with shaft rotation sensing mechanism for actuating switch. 3,737,600, Cl. 200-61.390.

Alexander, Paul, Jr.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,181.

Alfrey, Turner, Jr.: *See—*
Schrenk, Walter J.; Cleereman, Kenneth J.; Chisholm, Douglas S.; and Alfrey, Turner, Jr., 3,737,263.

All American Industries, Inc.: *See—*
Carnevale, Umberto A., 3,737,123.
Schllgel, William R., 3,737,124.

Allan, George, to FMC Corporation. Apparatus for clearing the screen of crop-harvesting product. 3,737,035, Cl. 209-380.000.

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Ameen, Jamiel; and Furbush, Seymour A., 3,737,392.
Cheema, Zafarullah K.; Formaini, Robert L.; and Ulmer, Harry L., 3,737,462.
Stewart, Donald F., 3,737,030.
Turner, Garland Linwood; Schuettler, Ralph William; and Collingwood, George Howard, 3,737,505.

Allington, Robert W. Switching-mode voltage and current regulator. 3,737,758, Cl. 321-18.000.

Allis-Chalmers Corporation: *See—*
Dreisin, Alexander, 3,737,100.

Allison, Leroy K., to North American Rockwell Corporation. Weft yarn control device. 3,736,963, Cl. 139-122.000.

Alphamedics Mfg. Corporation: *See—*
Berman, Richard M.; Schwartz, Bernard; and Bethke, Lyman W., 3,737,251.

Alsberg, Henry; and Frederiksen, Ronald A., to Richardson Company, The. Fabrication of printed circuit boards. 3,737,339, Cl. 117-212.000.

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Aluminum Company of America: *See—*
Blayden, Lee C.; Brondykl, Kenneth J.; and Spear, Robert E., 3,737,303.
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,304.
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,305.

Alvarado, Samuel Laboy. Music chord teaching device. 3,736,833, Cl. 84-473.000.

Amari, Katsuioshi: *See—*
Isuchiya, Noriyuki; and Amari, Katsuioshi, 3,737,583.

Amberg, Stephen W.; and Ludder, Rodney E., to Owens-Illinois, Inc., mesne. Multi wall container and package. 3,737,093, Cl. 229-14.00r.

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American Aviation Corporation: *See—*
Donnelly, Thomas S., 3,737,725.

American Cyanamid Company: *See—*
O'Brien, Samuel James; Stockel, Richard Frederick; and Herbes, William Frank, 3,737,284.
Schmitt, Edward E.; and Bailey, William J., 3,737,440.
Schmitt, Edward Emil; and Epstein, Martin, 3,736,646.
Shimoda, Keitaro; and Obama, Isamu, 3,737,507.
Wagner, Frank Albert, Jr., 3,737,529.

American Home Products Corporation: *See—*
Stepanek, Frank E., 3,736,917.

American Seating Company: *See—*
Barecki, Chester J.; and Karrip, Alexander A., 3,737,198.

American Standard, Inc.: *See—*
Parkison, Richard G., 3,736,959.
Parkison, Richard Grant, 3,736,923.

Ames, John B. Container construction. 3,737,066, Cl. 220-31.00s.

Amidon, Charles H., Jr.; and Galeone, Vincent A., to Gulf & Western Systems Company. Nozzle design for a fabric web treating facility. 3,736,669, Cl. 34-229.000.

AMP Incorporated: *See—*
Hoffman, Norman Edwin, 3,737,840.
Plana, Roberto, 3,737,656.

Anderson Electric Corporation: *See—*
Seaquist, James J., 3,737,558.

Anderson, Gordon S. Electrical clamp. 3,737,832, Cl. 339-14.00r.

Anderson, James E., to Jackson Vibrators, Inc. Ballast tamper blade. 3,736,879, Cl. 104-12.000.

Anderson, Norman C., to Varian Associates. Method for making metal-to-ceramic seals. 3,736,650, Cl. 29-473.100.

Anderson, Raymond John: *See—*
Cuthbert, Laurence Geoffrey; and Anderson, Raymond John, 3,737,897.

Anderson, Richard C., to General Electric Company. Thoria-yttrium-based ceramic materials. 3,737,331, Cl. 106-39.00r.

Andersson, Bror Axwl Erling: *See—*
Andersson, Erik Arne; and Andersson, Bror Axwl Erling, 3,736,928.

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Andreasen, Leif: *See—*
Soule, Winsor Jr.; and Andreasen, Leif, 3,737,872.

Ansari, Hifzur R.: *See—*
Fordham, William D.; and Ansari, Hifzur R., 3,737,467.

Antonio, John, to Mosler Safe Company, The. Ultrasonic transducer for intruder alarm system. 3,737,690, Cl. 310-8.200.

Antonson, Arvid L.; Bigelow, John E.; Stein, Charles R.; Mc Campbell, Carroll B.; and Van Horn, James W. General Electric Company Diffraction optics head of display. 3,737,212, Cl. 3-23-73.

Apparatus for removing tassels: *See—*
Dobson, Ora B., 3,736,730.

Appelmann, Horst: *See—*
Rush, Carl Jackson; and Appelmann, Horst, 3,736,701.

Applegate, Robert L. Portable X-ray radiation shielding device. 3,737,661, Cl. 250-65.00r.

Applied Power Industries, Inc.: *See—*
Leibundgut, James A., 3,736,843.

Aqua-Chem, Inc.: *See—*
Clark, George B., 3,737,043.

Arai, Sakuji: *See—*
Okura, Takao; Miyaki, Kiyoshi; and Arai, Sakuji, 3,736,912.

Arendash, Michael G., to General Electric Company. High intensity lamp containing thermal shorting fuse. 3,737,717, Cl. 315-75.000.

Arens Controls, Inc.: *See—*
Gregory, Ted W., 3,736,800.

Arizona Chemical Company, mesne: *See—*
Ruckel, Erwin Richard; Phillips, Ronald Frank; and Arlt, Herbert George, Jr., 3,737,418.

Arlt, Herbert George, Jr.: *See—*
Ruckel, Erwin Richard; Phillips, Ronald Frank; and Arlt, Herbert George, Jr., 3,737,418.

Armco Steel Corporation: *See—*
Hacker, Leon, 3,737,493.

Armstrong, Robert G., to Park-Ohio Industries, Inc. Apparatus for inductively heating and quench hardening an elongated workpiece. 3,737,610, Cl. 219-10.670.

Arnold, Melvin R.; and Schrage, Albert, to Dart Industries, Inc. Preparation of carbon supported promoted noble metal catalysts. 3,737,395, Cl. 252-447.000.

Arnold, Orlan M.; and Horn, Michael F., to Peabody Engineering Corporation. Double spray nozzle. 3,737,105, Cl. 239-423.000.

Arnold, Orlan M.; and Horn, Michael F., to Peabody Engineering Corporation. 360& spray nozzle. 3,737,106, Cl. 239-518.000.

Arnosky, Joseph E.; and Meermans, Ronald A., to Park-Ohio Industries, Inc. Workpiece expansion compensator for resistance heating apparatus. 3,737,619, Cl. 219-156.000.

Arnosky, Joseph L., to Park-Ohio Industries, Inc. Method and apparatus for resistance heating slotted tubes. 3,737,618, Cl. 219-156.000.

Arthur, Ronald H.; Eickhorst, Melvin F.; and Hansen, Earl A., to U.I.D. Electronics Corporation. Snap action slide switch. 3,737,601, Cl. 200-76.000.

Artzt, William Walter. Pull-over infant's garment. 3,736,597, Cl. 2-111.000.

Arvin Industries, Inc.: *See—*
Kelley, Jerry O., 3,737,880.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Takaki, Mareaki, 3,737,510.
Tsutsumi, Shigeru; and Sonoda, Noboru, 3,737,428.

Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, to Fujitsu Limited. Push-button operated tuner. 3,737,817, Cl. 334-7.000.

Ashland Oil, Inc.: *See—*
Green, William S.; and Newman, John W., 3,737,472.
Hicks, Harold N., Jr., 3,737,285.

Askam, John F.; and Goodwin, Charles, to Dunlop Company Limited, The. Apparatus for consolidating at least the bead portion of a tire carcass. 3,737,356, Cl. 156-402.000.

Aspenson, Lawrence A. Tile grooving and painting machine. 3,736,901, Cl. 118-2.000.

Asquith, William, Limited: *See—*
Ennis, Brian, 3,736,818.

Atchley, Oscar J. Multi-compartmental condiment shaker. 3,737,075, Cl. 222-142.900.

Atkinson, Joseph G.; and Cillis, David W., to Frosst, Charles E., & Co. Deuterated paraformaldehyde process. 3,737,464, Cl. 260-615.500.

Atlantic Richfield Company: *See—*
Bone, Lee, III, 3,737,037.
Bonetti, Giovanni A.; Rosenthal, Rudolph; Kieras, Joseph A.; and Wise, William B., 3,737,518.
Burk, Emmett H., Jr.; and Carlos, Donald D., 3,737,435.

Audio Designs and Manufacturing, Inc.: *See—*
Bloom, Robert A.; Sturtz, Charles R.; and McGrath, Timothy P., 3,736,801.

Aughton, John E., to Crosfield Electronics Limited. Half-tone image reproduction. 3,737,225, Cl. 355-48.000.

Aupoix, Marcel; Franckhauser, Francois Moisson; and Royet, Jean, to Compagnie Generale d'Electricite. Method of manufacturing asymmetrical superconductive cables for carrying either alternating or direct current. 3,736,656, Cl. 29-599.000.

Austin, James E. D., to Data General Corporation. Mounting structure for heat-generating devices. 3,737,728, Cl. 317-100.000.

Auto Specialties Manufacturing Company: *See—*
Morgan, George H.; and Nehrig, R. Harlan, 3,737,147.
Potter, Robert H.; and Ladewski, Bernard F., 3,737,146.

Automata Corporation: *See—*
Azure, Leo L., Jr., 3,737,628.

Automobiles Peugeot: *See—*
Maurice, Jean; and Mouttet, Andre, 3,737,205.
Mercier, Jacques, 3,736,858.

Avco Corporation: *See—*
Garard, Richard S.; and Mertens, William J., 3,737,102.
Hohenberg, Rudolph, 3,736,796.

Avis, Victor Arthur; and Matthews, Albert John, to Ciba-Geigy A.G. Reinforced plastics materials. 3,737,352, Cl. 156-181.000.

Azalbert, Jean P.; Giraud, Adrien; and Marquaire, Roger Andre, to Compagnie Francaise des Peboler. Reservoirs for the storage of liquids especially volatile liquids. 3,736,754, Cl. 61-.500.

Azure, Leo L., Jr., to Automata Corporation. Automatically programmed test grading and scoring method and system. 3,737,628, Cl. 235-61.60e.

Babb, Burton A.; Byer, Edward L.; Giffin, George S.; and Rife, Robert E. Electro-optical viewing device. 3,737,667, Cl. 250-213.00r.

Babel, Louis: *See—*
Peytavin, Pierre; and Babel, Louis, 3,736,980.

Babich, Edward: *See—*
Offutt, Elmer Bradley; and Babich, Edward, 3,737,071.

Bachmeier, Alfred, to Telefunken Patentverwertungs-gesellschaft m.b.H. Process for contacting a semiconductor device. 3,737,380, Cl. 204-15.000.

Bader Development Corporation: *See—*
Bader, Harry R., Jr., 3,737,744.

Bader, Harry R., Jr., to Bader Development Corporation. Body detecting industrial safety system. 3,737,744, Cl. 317-33.00r.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Eilingsfeld, Heinz; and Scheuermann, Horst, 3,737,449.

Baer, Ralph H.; and Rusch, William T., to Sanders Associates, Inc. Television coder and decoder. 3,737,566, Cl. 178-5.80r.

Bailey Meter Company: *See—*
Cohen, Kenneth W., 3,736,960.

Bailey, Wayne. Propellants from earth's heat. 3,736,744, Cl. 60-6.000.

Bailey, William J.: *See—*
Schmitt, Edward E.; and Bailey, William J., 3,737,440.

Bailly, Jean Claude, to Naphtachimie. Method of preparation of polymers of propylene and/or butylenes. 3,737,476, Cl. 260-683.15d.

Baker, Colin J., to Email Limited. Lid latch off-balance switch. 3,736,772, Cl. 68-12.00r.

Baker, Noel John, to Witton-James Limited. Web-transisioning apparatus. 3,737,115, Cl. 242-75.100.

Baker-Roos, Inc.: *See—*
Herrell, Robert C., 3,737,007.

Bako, Lazlo, to Presto Lock Co., division of Kidde, Walter, & Company, Inc. Combination lock. 3,736,778, Cl. 70-70.000.

Ball, Malcolm James, to Imperial Chemical Industries Limited. Composite cartridge pack for hardening resins. 3,737,027, Cl. 206-47.00a.

Bangor Punta Operations, Inc.: *See—*
Taccone, Russell W., 3,736,978.

Banks, Eric John, to Ford Motor Company. Motor vehicle transmission. 3,736,806, Cl. 74-336.000.

Bannister, Brian, to Upjohn Company, The. Derivatives of lincomycin. 3,737,425, Cl. 260-210.00r.

Baptista, John L.; and Smith, Albert C., Jr., to Eastman Kodak Company. Multicolor photographic film elements comprising a minimum sensitivity sound track recording silver halide emulsion layer and processes for their use. 3,737,312, Cl. 96-4.000.

Baranauckas, Charles F.; and Gordon, Irving, to Borg-Warner Corporation, mesne. Esters of phosphonic acid as fire-retardants in polyurethane foams. 3,737,397, Cl. 260-2.5aj.

Barecki, Chester J.; and Karrip, Alexander A., to American Seating Company. Rapid transit seating. 3,737,198, Cl. 297-450.000.

Barge, Jean Joseph: *See—*
Boissier, Lucien Albert; and Barge, Jean Joseph, 3,737,173.

Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., to International Business Machines Corporation. Machine for punching and printing document cards. 3,737,097, Cl. 234-114.000.

Barnes Drill Co.: *See—*
Estabrook, Mark R.; and Treder, Wilfred F. W., 3,736,703.

Barnes, Edward. Meter. 3,736,890, Cl. 111-7.000.

Barnes, Roland C. Rate adaptive nonsynchronous demodulator apparatus for biphase binary signals. 3,737,632, Cl. 235-61.11e.

Barnett, James H., Jr.: *See—*
Radnofsky, Matthew I.; Barnett, James H., Jr.; Harrison, Floyd L.; and Marak, Ralph J., 3,736,607.

Barrow, Gilbert C., to Massa Division, Dynamics Corporation of America. Method of making an electroacoustic transducer. 3,736,632, Cl. 29-25.350.

Barta, Franz; and Grupp, Alfred F., to Meyercord Co., The. Web processing apparatus. 3,737,088, Cl. 226-119.000.

Barta, Franz; and Grupp, Alfred F., to Meyercord Co., The. Web processing apparatus. 3,737,091, Cl. 226-193.000.

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Basiulis, Algerd, to Hughes Aircraft Company. Cryogenic tool. 3,736,937, Cl. 128-303.100.

Bass, Sidney: *See—*
Laird, Alexandra B.; and Bass, Sidney, 3,736,696.

Bass Sports, Inc.: *See—*
Check, Donald R.; Ader, Gary B.; and Pauls, Edward A., 3,736,612.

Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, to Bell Telephone Laboratories, Incorporated. Technique for the preparation of ion implanted tantalum-aluminum alloy. 3,737,343, Cl. 117-227.000

Basso, Jude A.; Lemaire, Normand A.; and Fulger, Charles V., to Kellogg Company. Beverage containing egg albenmen and whey. 3,737,326, Cl. 99-78.000.

Bastin, Jean-Michel: *See—*
Jucker, Ernst; Ebnother, Anton; and Bastin, Jean-Michel, 3,737,544.

Bates, Darwin S.; and Szymanski, Edward R., to Addressograph-Multigraph Corporation. Traveling cylinder printer with selectively slidable code bars having plural marking means. 3,736,867, Cl. 101-45.000.

Battelle Memorial Institute: *See—*
Schaeffer, Gerard; Trub, Jean; and Bouvet, Jean, 3,737,151.

Battenfeld Maschinenfabriken G.m.b.H.: *See—*
Putzler, Friedrich, 3,737,278.

Baum, John W., to Zoecon Corporation. Thio-ether derivatives of 3,7,11-trimethyl dodeca-2,4-dienoates useful in the control of insects. 3,737,442, Cl. 260-399.000.

Bauman, Francis E., to Owens-Illinois, Inc. Apparatus for feeding glass rods. 3,737,020, Cl. 198-22.00r.

Bausch & Lomb Incorporated: *See—*
Howe, James D., 3,737,210.

Bayer Aktiengesellschaft: *See—*
Jager, Gerhard; and Wegler, Richard, 3,737,429.
Krimm, Heinrich; Lenz, Gunther; and Schnell, Hermann, 3,737,413.
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,737,438.

Bazler, Seward M.; and Lane, William C., to Mead Corporation, The. High opacity paper. 3,737,371, Cl. 162-181.00b.

Beach, David E., to Eastman Kodak Company. Film metering mechanism for cameras. 3,736,854, Cl. 95-31.0fm.

Beadley, Charles Edward, Jr.: *See—*
Karsten, Kenneth S.; and Beadley, Charles Edward, Jr., 3,737,551.

Beale, Alvin Francis, Jr., to Dow Chemical Company, The. Biuret-polyethylenimine resins. 3,737,414, Cl. 260-77.50c.

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Beazley, Rodney Thomas: *See—*
Romer, Hugh Frank; and Beazley, Rodney Thomas, 3,736,635.

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Becker, Michael, to Siemens Aktiengesellschaft. Control device for filter circuits connected in parallel with each other and tuned to different resonance frequencies. 3,737,791, Cl. 328-167.000.

Beckley, William E. Dry chemical unit-fire truck. 3,736,985, Cl. 169-31.00p.

Beckman Instruments, Inc.: *See—*
Miller, Curtis E., 3,737,687.
Rosmanith, Carl William, 3,737,594.

Beckman, Milo H., to ESB Incorporated. Method for forming and placing tubular battery separators and means embodying the method. 3,736,655, Cl. 29-592.000.

Becton, Dickinson & Company: *See—*
Dunnican, Ward G.; and Sutryn, Caroll S., 3,736,824.

Beecham Group Limited: *See—*
Cole, Martin; and Rolinson, George Newbolt, 3,737,523.

Beery, Jack; and Russell, Donald C., to Burroughs Corporation. Controlled torque document feed system. 3,737,158, Cl. 271-10.000.

Belet, Joseph J.; and Quanstrom, Jack L., to International Business Machines Corporation. Bipolar conversion analog-to-digital converter. 3,737,893, Cl. 340-347.0nt.

Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Docking structure for spacecraft. 3,737,117, Cl. 244-1.0sd.

Belknap, Donald J., 27.50% to Shapiro, Nelson H. and 22.50% to Field, Milton M. Apparatus and methods for making miniature incandescent lamps and the like. 3,736,630, Cl. 29-25.200.

Bell & Howell Company: *See—*
Schmidt, Josef, 3,737,086.

Bell, Oliver A., Jr., to Elox Inc. Current and frequency control system for electrical discharge machining apparatus. 3,737,615, Cl. 219-69.00c.

Bell Telephone Laboratories, Incorporated: *See—*
Bartelink, Dirk Jan; and Persky, George, 3,737,741.
Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, 3,737,343.
Blendinger, Frederick Lawrence; and Littlefield, Donald Frank (said Blendinger, Frederick Lawrence, assor. to), 3,737,655.
Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, 3,737,755.
Godfrey, James, 3,737,346.
Hasley, Andrew Daniel; and Hock, Richard Howard, 3,737,756.
Johnson, Glover Douglas, 3,737,586.
Romero, Roderic, 3,737,587.

Bellhouse, Brian John; and Bellhouse, Francis Hewitt. Prosthetic cardiac valve. 3,736,598, Cl. 3-1.000.

Bellhouse, Francis Hewitt: *See—*
Bellhouse, Brian John; and Bellhouse, Francis Hewitt, 3,736,598.

Benassi, Dominic A., to Minnesota Mining and Manufacturing Company. Autotransformer assisted resonating energy transfer circuit. 3,737,735, Cl. 317-148.50b.

Benda, Klaus V.; Binder, Horst; and Paul, Wolfgang, to Volkswagenwerke Aktiengesellschaft, mesne. Process for increasing the activity of porous fuel cell electrodes. 3,737,344, Cl. 136-12.ofc.

Bendix Corporation, The: *See—*
Kasten, Walter, 3,737,036.
Lademann, Ernest E., 3,736,999.
Nocek, Stanley J.; Marko, Albert J.; and Zenack, Leslie D., 3,737,644.
Ryan, Merle E.; and Stremel, William D., 3,736,705.
Valentine, Harry M., 3,736,842.

Benjamin, John Stanwood: *See—*
Cairns, Robert Lacock; and Benjamin, John Stanwood, 3,737,300.

Bennett, Ian M.: *See—*
Alcott, Graham J.; Bennett, Ian M.; and Secrest, Gerald R., 3,737,347.

Bentz, Francis: *See—*
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, 3,737,420.

Berdelle-Hilge, Philipp, to Intermag GmbH. Continuous fermentation process for producing alcoholic beverages. 3,737,323, Cl. 99-31.000.

Beretta, Graziella: *See—*
Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, 3,737,439.

Berger, Gila; Daren, Stephen; Levy, Moshe; and Vofsi, David, to Yeda Research and Development Co., Ltd. Process for the production of bromostyrene and alkyl bromide. 3,737,469, Cl. 260-650.00r.

Bergman, Manfred: *See—*
Mutschelknauss, Ralf E.; Schumann, Johannes P.; and Bergman, Manfred, 3,736,918.

Berman, Richard M.; Schwartz, Bernard; and Bethke, Lyman W., to Alphamedics Mfg. Corporation. Peristaltic pump. 3,737,251, Cl. 417-12.000.

Berstein, Gregor, to Cabot Corporation. Pigment compositions containing rutile titania and particulate urea-formaldehyde resin. 3,737,404, Cl. 260-39.00r.

Bertolini Engineering Co., Inc.: *See—*
Bertolini, William A., 3,737,135.

Bertolini, William A., to Bertolini Engineering Co., Inc. Locking device. 3,737,135, Cl. 248-361.00r.

Bertsch, Peter K.: *See—*
Richmond, Thomas C.; and Bertsch, Peter K., 3,736,761.

Bestenreiner, Friedrich: *See—*
Wick, Richard; Bestenreiner, Friedrich; and Deml, Reinhold, 3,737,574.

Bethke, Lyman W.: *See—*
Berman, Richard M.; Schwartz, Bernard; and Bethke, Lyman W., 3,737,251.

Bethlehem Steel Corporation: *See—*
Kwong Chu, Vincent Hao, 3,737,301.

Betz Laboratories, Inc.: *See—*
Stern, Arthur M.; and Gasner, Lawrence L., 3,737,374.

Beusink, Bernard Joseph: *See—*
Horowitz, Alexandre; Beusink, Bernard Joseph; and Cuypers, Martinus Hubertus, 3,736,803.

Bigelow, John E.: *See—*
Antonson, Arvid L.; Bigelow, John E.; Stein, Charles R.; Mc Campbell, Carroll B.; and Van Horn, James W., 3,737,212.

Biggs, Orrick Howard; Homer, Horace H.; Lougheridge, Frederick A.; and Westlund, Arnold, to Sylvania Electric Products, Inc. Automotive headlight. 3,737,653, Cl. 240-41.300.

Billingham, John: *See—*
Chambers, Alan B.; Blackaby, James R.; and Billingham, John, 3,736,764.

Binder, Horst: *See—*
Benda, Klaus V.; Binder, Horst; and Paul, Wolfgang, 3,737,344.

Binks Manufacturing Company: *See—*
Shaffer, Patrick D., 3,737,099.

Bio-Logics, Inc.: *See—*
Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., 3,737,863.

Biochemie Gesellschaft m.b.H.: *See—*
Brandl, Ernst; Kleiber, Walter; and Knauseder, Franz, 3,737,375.

Biondi, Frank J., to United States of America, Atomic Energy Commission, mesne. Apparatus for testing ductility of sheets. 3,736,794, Cl. 73-102.000.

Bird & Son, Inc.: *See—*
Jackson, James W., 3,737,498.

Bird, Stanford W., to Plastronics Corporation. Pie container. 3,737,068, Cl. 220-60.000.

Birkin, Michael Sambrook, to British Railways Board. Communication systems for receiving and checking repeatedly transmitted multi-digital telegrams. 3,737,577, Cl. 178-23.00a.

Bishop, John W.: *See—*
Ehrlich, Shelton; Bishop, John W.; and Robison, Ernest B., 3,736,908.

Bjorksten Research: *See—*
Paquette, Elmer G., 3,736,683.

Black and Decker Manufacturing Company, The: *See—*
Brucker, William S., 3,736,863.
Zander, Richard L.; Ostwald, Erich; and Sides, Daniel H., 3,736,992.

Black, Herman Wendell; and Wright, Richard R. Seat suspension apparatus. 3,737,195, Cl. 297-142.000.

Black, William J.; Lanz, William E.; and Wilson, Eugene M., to Caterpillar Tractor Company. Replaceable pinned-on cutting edge. 3,735,664, Cl. 37-141.00r.

Blackaby, James R.: *See—*
Chambers, Alan B.; Blackaby, James R.; and Billingham, John, 3,736,764.

Blake, John B. Clamping device. 3,736,629, Cl. 24-248.0sa.

Blake, Ralph Kingsley, to Du Pont de Nemours, E. I., and Company. Copper (1) salt-hydrophilic binder lithographic images. 3,736,871, Cl. 101-456.000.

Blakeslee, A. Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., to International Business Machines Corporation. Single crystal regions in dielectric substrate. 3,737,739, Cl. 317-235.000.

Blau, Donald Z.; and Kaufman, Jesse C., to Singer Company, The mesne. Vector velocimeter. 3,737,233, Cl. 356-28.000.

Blayden, Lee C.; Brondykl, Kenneth J.; and Spear, Robert E., to Aluminum Company of America. Refining molten aluminum with chlorine-activated bodies. 3,737,303, Cl. 75-68.00r.

Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., to Aluminum Company of America. Process for treating molten aluminum. 3,737,304, Cl. 75-68.00r.

Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., to Aluminum Company of America. Treating molten aluminum. 3,737,305, Cl. 75-68.00r.

Bleicher, Manfred: *See—*
Wanner, Karl; Bleicher, Manfred; Sigg, Horst; and Burklin, Max, 3,737,170.

Blendinger, Frederick Lawrence; and Littlefield, Donald Frank, said Blendinger, Frederick Lawrence, assor. to Bell Telephone Laboratories, Incorporated and said Littlefield, Donald F., assor. to Western Electric Company, Incorporated. Light pen. 3,737,655,Cl. 240-2.00s.

Bliss, William W. Drying hanger assembly for woolen garments, and the like. 3,737,079, Cl. 223-68.000.

Block Engineering, Inc.: *See—*
Martin, James R., 3,737,625.

Bloom, Robert A.; Sturtz, Charles R.; and McGrath, Timothy P., to Audio Designs and Manufacturing, Inc. Slide antennuator. 3,736,801, Cl. 74-89.000.

Blose, Werner, to Sohlegel Manufacturing Company, The. Pile covering. 3,736,759, Cl. 61-54.000.

Bobkowicz, Andrew: *See—*
Bobkowicz, Emilian J.; and Bobkowicz, Andrew, 3,737,357.

Bobkowicz, Emilian J.; and Bobkowicz, Andrew. Apparatus for forming fibertapes. 3,737,357, Cl. 156-495.000.

Bobrin, Marshall C., to United States of America, Navy. Feature recognition techniques. 3,737,842, Cl. 340-4.00r.

Bodor, Mary Elizabeth. Animal toy. 3,737,196, Cl. 297-181.000.

Boecker, Allan J., to Akron Brass Company. Quick-release article holder. 3,737,133, Cl. 248-313.000.

Boeing Company, The: *See—*
Fletcher, Ralph P., Jr., 3,736,652.

Boeler, Richard C., to Wagner Electric Corporation. Control valve. 3,737,602, Cl. 200-82.00d.

Boer, Dirk, to U.S. Philips Corporation. Signal processing arrangement for a colour television camera circuit. 3,737,561, Cl. 178-5.40r.

Boissier, Lucien Albert; and Barge, Jean Joseph. Torsion bar suspension system. 3,737,173, Cl. 280-104.50r.

Boldebuck, Edith M., to General Electric Company. Method for making polyamide acid salts and products derived therefrom. 3,737,478, Cl. 260-780.00a.

Bolduc, Lee R., to Medtronic, Inc. Body tissue electrode and device for screwing the electrode into body tissue. 3,737,579, Cl. 128-418.000.

Bone, Lee, III, to Atlantic Richfield Company. Drilling fluid treatment. 3,737,037, Cl. 210-73.000.

Bonetti, Giovanni A.; Rosenthal, Rudolph; Kieras, Joseph A.; and Wise, William B., to Atlantic Richfield Company. Process for preparing hydrogen peroxide. 3,737,518, Cl. 423-587.000.

Bonnette, Richard Arthur: *See—*
Lindburg, Norman Lee; Bonnette, Richard Arthur; and Deegan, Thomas Edward, 3,737,706.

Boom, Abraham A., to Celanese Corporation. Production of improved semipermeable polybenzimidazole membranes. 3,737,042, Cl. 210-321.000.

Borden, Douglas G., to Eastman Kodak Company. Photographic elements comprising photo-sensitive polymers. 3,737,319, Cl. 96-115.00r.

Borg-Warner Corporation, mesne: *See—*
Baranauckas, Charles F.; and Gordon, Irving, 3,737,397.

Born, John W., to Goodrich, B. F., Company, The. Formulation for sustained release of a biological agent. 3,737,521, Cl. 424-22.000.

Borrelli, Nicholas F., to Corning Glass Works. Magnetooptic readout system utilizing optical waveguide fibers. 3,737,236, Cl. 356-118.000.

Bosch, Robert, Fernsehanlagen Gesellschaft mit beschraenkter Haftung: *See—*
Legler, Ernst, 3,737,796.

Bosch, Robert, G.m.b.H.: *See—*
Raff, Lothar, 3,736,910.
Rothermel, Dieter, 3,737,681.
Schmaldienst, Peter; and Brand, Gunter, 3,736,914.
Schnell, Gerhard, 3,737,062.
Wanner, Karl; Bleicher, Manfred; Sigg, Horst; and Burklin, Max, 3,737,170.

Boswell, Howard G.; and Partridge, Charles C. Rotary valve operator. 3,737,142, Cl. 251-58.000.

Bottas, Michael J.; and Difley, Charles R., to Whirlpool Corporation. Refuse compactor with ram wiper. 3,736,864, Cl. 100-53.000.

Bottorf, Robert G., to FMC Corporation. Walking beam conveyor with weighing apparatus. 3,736,997, Cl. 177-145.000.

Bourns, Inc.: *See—*
Gaskill, Robert E.; and Frey, Sydney W., Jr., 3,737,634.

Bouvet, Jean: *See—*
Schaeffer, Gerard; Trub, Jean; and Bouvet, Jean, 3,737,151.

Bown, Delos E.: *See—*
Schutze, Henry G.; Williams, Herschel C.; Neureiter, Norman P.; and Bown, Delos E., 3,737,486.

Brand, Gunter: *See—*
Schmaldienst, Peter; and Brand, Gunter, 3,736,914.

Brandl, Ernst; Kleiber, Walter; and Knauseder, Franz, to Biochemie Gesellschaft m.b.H. Process for the production of 6-aminopenicillonic acid. 3,737,375, Cl. 195-36.00p.

Branson Instruments, Inc.: *See—*
Obeda, Edward G., 3,737,361.

Branson, Theodore A.: *See—*
Yang, Tung H.; and Branson, Theodore A., 3,736,883.

Bregman, Bernard J.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,639.

Brenner, J. Fred. Wall stud system. 3,736,714, Cl. 52-300.000.

Brethour, John R. Method of fattening beef cattle. 3,737,535, Cl. 424-243.000.

Breton, Alain: *See—*
Herrbach, Paul; and Breton, Alain, 3,737,504.

Breuer, David R.; and Buie, James L., to TRW Inc. Bi-polar semiconductor device employing cermet for both schottky barrier and ohmic contact. 3,737,742, Cl. 317-235.00r.

Briggs, Henry P., to Mohawk Data Sciences Corporation. Apparatus for printing serially-received data. 3,736,868, Cl. 101-93.00c.

Briggs, Lloyd A.: *See—*
Briggs, Lloyd A.; Kazen, Dave R.; and Viers, Val R. (said Viers assor. to said), 3,737,222.

Briggs, Lloyd A.; Kazen, Dave R.; and Viers, Val R., said Viers assor. to said Briggs, Lloyd A. Copying machine. 3,737,222, Cl. 355-3.000.

Brindle, Stanley M.: *See—*
Tregerman, Leon; and Brindle, Stanley M., 3,737,868.

Brissey, George E.: *See—*
Richter, Eike; and Brissey, George E., 3,737,696.

Bristow, Robert H., to General Electric Company. Method of making ceramic-to-metal seal. 3,736,649, Cl. 29-473.100.

British Aircraft Corporation: *See—*
Farmer, Rodney Clifford, 3,737,125.

British Bata Shoe Company, Limited, The: *See—*
Tusa, John; Lawrence, Leslie Charles; and Plampton, Stanley Norman, 3,736,613.

British Insulated Callender & Cables Limited: *See—*

Verne, Stefan; and Heggs, Thomas Geoffrey, 3,737,557.
British Insulated Callenders Cables Limited: *See*—
Nicholson, Peter, 3,737,490.
British Railways Board: *See*—
Birkin, Michael Sambrook, 3,737,577.
Britt, Jack, to Rolls-Royce Limited. Power plant. 3,736,750, Cl. 60-226.00a.
Brokke, Mervin E.; Menn, Julius J.; and Dorman, Stephen C., to Stauffer Chemical Company. Insecticidal isobutoxy ethylphosphonodithioate esters. 3,737,532, Cl. 424-222.000.
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Antistatic acrylonitrile polymers. 3,737,420, Cl. 260-85.50r.
Bromsen, Wilhelm: *See*—
Butterweck, Artur; and Bromsen, Wilhelm, 3,736,838.
Brondyke, Kenneth J.: *See*—
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,304.
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,305.
Brondykl, Kenneth J.: *See*—
Blayden, Lee C.; Brondykl, Kenneth J.; and Spear, Robert E., 3,737,303.
Brown, Bruce J., to United States of America, Navy. Noise-riding slicer. 3,737,790, Cl. 328-165.000.
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., to Quaker Oats Company, The. N,N'-bis((tri(substituted))silylalky lene)-1,4-xylene-alpha, alpha'-diimine. 3,737,430, Cl. 260-240.00g.
Brown, Merle S.: *See*—
Gardner, John A., Jr.; Brown, Merle S.; and Jacobs, William H., 3,737,076.
Brown, Terry D.: *See*—
Wood, Harold V.; and Brown, Terry D., 3,737,484.
Brown, Wilfred E.: *See*—
Haroules, George G.; and Brown, Wilfred E., 3,737,905.
Brown, William R. Venturi device. 3,736,797, Cl. 73-213.000.
Broxholm, Thomas M., to Pulsepower Systems, Inc. Lock for a reciprocating mechanism. 3,736,687, Cl. 42-16.000.
Broyhill Furniture Industries: *See*—
Icard, Joseph W., 3,737,034.
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., to Sterigard Corporation. Means for attaching a dispensing valve to a pressurized dispenser with a lock ring. 3,737,077, Cl. 222-153.000.
Brucker, William S., to Black and Decker Manufacturing Company, The. Trash compactor. 3,736,863, Cl. 100-45.000.
Bruinsma, Anne Hendrik, to U.S. Philips Corporation. Control circuit for varying and for colour and black-and-white gradations in colour and monochrome television. 3,737,564, Cl. 178-5.40r.
Brunone, Peter P., to Veeder Industries, Inc. Fluid dispensing apparatus preselector system. 3,737,017, Cl. 194-13.000.
Brunswick Corporation: *See*—
Roberts, John A.; and Roberts, Peter R., 3,737,367.
Brydoy, Sverre; and Sletsjoe, Aage. Vessel for the removal of oil on water. 3,737,040, Cl. 210-206.000.
BTR Industries Limited: *See*—
Olive-Jones, Michael William; and Randall, Douglas Raymond, 3,736,788.
Buch, Roman; and Kocsis, Louis L., to Zenith Radio Corporation. DC level restoring circuit. 3,737,793, Cl. 330-11.000.
Buchel, Karl Heinz: *See*—
Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 3,737,548.
Buchel, Karlheinz: *See*—
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, 3,737,531.
Bucklishch, Ludwig, to Dynamit Nobel Aktiengesellschaft. Explosive charge with annular ignition gap. 3,736,875, Cl. 102-24.0hc.
Budzyna, Joseph M., to North American Rockwell Corporation. Weft storage device. 3,736,964, Cl. 139-122.00h.
Buecherl, Erwin, to Siemens Aktiengesellschaft. Transmission separation filter network for electric oscillations. 3,737,813, Cl. 333-70.00r.
Buie, James L.: *See*—
Breuer, David R.; and Buie, James L., 3,737,742.
Bunton, Geoffrey Vernon: *See*—
Ellis, Alfred Brian Edwin; and Bunton, Geoffrey Vernon, 3,737,668.
Burgener, Willis R.: *See*—
Pao, Robert K. C.; and Burgener, Willis R., 3,737,640.
Burger, Joanne D.: *See*—
Howard, William L.; and Burger, Joanne D., 3,737,463.
Burk, Emmett H., Jr.; and Carlos, Donald D., to Atlantic Richfield Company. Cyclic nitrile carbonate group-containing chloroformates. 3,737,435, Cl. 260-307.00a.
Burkhardt, Edward A., to FMC Corporation [C R P3737212 L8 W1:. Extended life bearing. 3,737,204, Cl. 308-241.000.
Burkitt, Sherman C., to FMC Corporation. Coal preparation process and magnetite reclaimer for use therein. 3,737,032, Cl. 209-10.000.
Burklin, Max: *See*—
Wanner, Karl; Bleicher, Manfred; Sigg, Horst; and Burklin, Max, 3,737,170.
Burndept Electronics (E.R.) Limited: *See*—
Pierce, Reginald Roy, 3,737,782.
Burns, Edward P.: *See*—
Lee, Sung C.; and Burns, Edward P., 3,737,765.
Burns, Richard H.: *See*—
United States of America, National Aeronautics and Space Administration, 3,737,231.
Burroughs Corporation: *See*—
Beery, Jack; and Russell, Donald C., 3,737,158.
Werner, John R., 3,737,864.
Burrows, Joseph M. Removable peripheral light assembly for bathroom mirror. 3,737,646, Cl. 240-4.200.
Bush, Philip D.: *See*—
Fitzhugh, Edward F., Jr.; Bush, Philip D.; and Seidel, Don C., 3,737,307.
Butler, Luther C., Jr., to Lorain Products Corporation. Majority logic system. 3,737,674, Cl. 307-204.000.
Butler Manufacturing Company: *See*—
Stephenson, Fred J., 3,736,706.
Butterweck, Artur; and Bromsen, Wilhelm, to Hoesch Aktiengesellschaft. Protective shielding. 3,736,838, Cl. 89-36.00a.
Buus, Harold W.; and Morgan, Donald G., to Magnetics International, Inc. Magnetic separator. 3,737,822, Cl. 335-304.000.
Byer, Edward L.: *See*—
Babb, Burton A.; Byer, Edward L.; Giffin, George S.; and Rife, Robert E., 3,737,667.
Byrnes, Charles J.; and Vassilaros, George L., to Crucible Inc. Method for treating titanium scrap. 3,737,306, Cl. 75-101.00r.
Cabezas, Orlando. Articulated ironing board. 3,736,679, Cl. 38-139.000.
Cableform Limited: *See*—
Morton, John; Stevesn, Keith Drummond; and Thexton, Graham Spencer, 3,737,821.
Cabot Corporation: *See*—
Berstein, Gregor, 3,737,404.
Caccamo, Samuel. Mounting means for animating existing decoy. 3,736,688, Cl. 43-3.000.
Cahpman, Grosvenor, to Chapman & Miller Architects. Collapsible roof for preassembled building. 3,736,708, Cl. 52-92.000.
Cain, Robert H. Windshield ejector for vehicles. 3,737,193, Cl. 296-84.00k.
Cairns, Robert Lacock; and Benjamin, John Stanwood, to International Nickel Company, Inc. Dispersion strengthened titanium alloys. 3,737,300, Cl. 75-.5bc.
Caldwell, Harold L.: *See*—
Faurl, Alfhonse W.; and Caldwell, Harold L., 3,737,296.
Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, to Bell Telephone Laboratories, Incorporated. Regulated DC to DC converter with regulated current source driving a nonregulated inverter. 3,737,755, Cl. 321-2.000.
Cameron Iron Works, Inc.: *See*—
Carman, Richard J., 3,737,857.
Camp, Gary Van: *See*—
Cupp, Frederick B.; and Camp, Gary Van, 3,737,895.
Campbell, Robert Bruce, to Lear Siegler, Inc. Latched gating circuit. 3,737,675, Cl. 307-211.000.
Campbell, Robert Henry; and Wise, Raleigh Warren, to Monsanto Company. Preparation of sulfenamides by catalytic oxidation. 3,737,431, Cl. 260-247.100.
Campbell, William Shore: *See*—
Porter, David; Campbell, William Shore; and Duck, Edward William, 3,737,488.
Camras, Marvin, to IIT Research Institute. Video recording system. 3,737,568, Cl. 178-6.60a.
Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence: *See*—
Maynard, Lawrence A., 3,737,906.
Canon Kabushiki Kaisha: *See*—
Ishikawa, Mitsuo, 3,736,850.
Cantral, John Isaac; and Taube, Robert Otto, to Deere & Company. Depth and side draft control system for agricultural implements. 3,736,988, Cl. 172-7.000.
Cantwell, Joseph R.; Fagin, Samuel L.; and Strell, Hyman, to United States of America, Navy. Gyro axis perturbation technique for calibrating inertial navigation systems. 3,736,791, Cl. 73-1.00e.
Capelle, Louis C.: *See*—
Klein, Nicholas L., Jr., 3,736,605.
Carborundum Company, The: *See*—
Hill, Vincent G.; and Harding, William R., 3,737,276.
Cardinal of Adrian, Inc.: *See*—
MacDonald, Robert D., 3,736,834.
Carlos, Donald D.: *See*—
Burk, Emmett H., Jr.; and Carlos, Donald D., 3,737,435.
Carlson, Arnold August. Cooking iron. 3,736,859, Cl. 99-331.000.
Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S., to Merck & Co., Inc. Antiparasitic composition containing nitroimidazole derivatives useful in the treatment of poultry diseases. 3,737,547, Cl. 424-273.000.
Carlson, Reuben T.: *See*—
Mathers, Kenneth R.; and Carlson, Reuben T., 3,736,920.
Carlson, Russell L., to Morgan Adhesives Company. Packaged adhesive laminate and method of making the same. 3,737,028, Cl. 206-52.00r.
Carlsson, Lars Anders Fritz; Erik, Ake John; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik. Lowering excessive serum lipid concentrations and preparations containing fluoro-pyridine derivatives. 3,737,542, Cl. 424-263.000.

Carman, Richard J., to Cameron Iron Works, Inc. Acoustic control system having alternate enabling and control signal. 3,737,857, Cl. 340-148.00r.

Carnevale, Umberto A., to All American Industries, Inc. Energy absorber for aircraft arresting device. 3,737,123, Cl. 244-110.00a.

Carney, Durland B., to Zeltex, Inc. Electronic package and method of construction. 3,737,729, Cl. 317-101.0dh.

Carr, James P., to FMC Corporation. Crop harvester. 3,736,738, Cl. 56-330.000.

Carretta, Ferdinando: *See—*
Mezzanotte, Mario; Carretta, Ferdinando; and Turchetti, Gianni, 3,736,973.

Carrier Corporation: *See—*
Pilarczyk, Karol; and Pennink, Hans, 3,737,252.

Carroll, Howard I.: *See—*
Kaprelian, Edward K.; and Carroll, Howard I., 3,736,837.

Carroll, James E., Jr.: *See—*
O'Hagan, Robert M.; De Spautz, Joseph F.; Carroll, James E., Jr.; and Sorensen, Richard H., 3,737,902.

Carroll, Richard W., to U.S. Industries, Inc. Interlocking magazine structure. 3,737,031, Cl. 206-65.00f.

Carson Manufacturing Co.: *See—*
Carson, Robert N., Jr., 3,736,604.

Carson, Robert N., Jr., to Carson Manufacturing Co. Fluid filled mattress. 3,736,604, Cl. 5-348.0wb.

Carstens, Daniel K.; and Edwards, Beverly C. D., Jr., to Tluor Corporation. Laterally-stabilized stinger suspension system. 3,736,760, Cl. 61-72.100.

Carter, Forrest L. X-ray target changer using a translating anode. 3,737,698, Cl. 313-60.000.

Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., to International Business Machine Corporation. Status switching arrangement. 3,737,870, Cl. 340-172.500.

Cary Instruments: *See—*
Hawes, Roland C., 3,737,235.

Cascade Corporation: *See—*
Farmer, Stanley E., 3,737,049.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Von Brachel, Hanswilli; and Aldebert, Friedrich, 3,737,437.

Castelli, Cesar: *See—*
Henry, Jean-Claude; Castelli, Cesar; and Henry, Georges, 3,737,836.

Caterpillar Mitsubishi Ltd.: *See—*
Yotsumoto, Kokichi, 3,737,002.

Caterpillar Tractor Company: *See—*
Beals, Duane E.; and Page, Russell D., 3,737,003.
Black, William J.; Lanz, William E.; and Wilson, Eugene M., 3,736,664.
Easterling, Gene B., 3,736,987.
Herr, Charles H., 3,736,814.
Krauja, Ziedonis I.; and Opperman, Kenton C., 3,737,258.
Peterson, Robert A.; and Stroot, Donald H., 3,737,059.
Shankwitz, Robert F.; and Thies, Jerome A., 3,736,675.

Cavin, Doyle K.; and Trousdale, Robert B. Digital computer with accumulator sign bit indexing. 3,737,867, Cl. 340-172.500.

Celanese Corporation: *See—*
Boom, Abraham A., 3,737,042.

Central Glass Company, Limited: *See—*
Nagae, Yasuyuki, 3,737,665.

Centuri Engineering Company, Inc.: *See—*
McAllister, Jack G., 3,736,836.

Chadwick, Philip, to General Electric Company. Voltage distortion detection and control for HVDC converter. 3,737,763, Cl. 321-11.000.

Chamberlin, Richard M.; and Stana, Regis R., to Westinghouse Electric Corporation. Liquid treatment system for high pH water. 3,737,044, Cl. 210-501.000.

Chambers, Alan B.; Blackaby, James R.; and Billingham, John, to United States of America, National Aeronautics and Space Administration. Temperature controller for a fluid cooled garment. 3,736,764, Cl. 62-89.000.

Champion Spark Plug Company: *See—*
Rempes, Paul E., Jr.; and Houghton, Le Roy H., 3,737,718.

Chang, Shih-Chieh. Calendar for mounting on watch band. 3,736,681, Cl. 40-109.000.

Chapman & Miller Architects: *See—*
Cahpman, Grosvenor, 3,736,708.

Charavel, Bernard, to Produits Chimiques Pechiney Saint-Gobain. Process for the preparation of methyl vinyl ketone and 2,5-dihydrofuran. 3,737,441, Cl. 260-346.10r.

Check, Donald R.; Ader, Gary B.; and Pauls, Edward A., to Bass Sports, Inc. Method of fitting ski boots. 3,736,612, Cl. 12-142.00p.

Cheema, Zafarullah K.; Formaini, Robert L.; and Ulmer, Harry L., to Allied Chemical Corporation. Method for the preparation of 1/2-diaminopropane. 3,737,462, Cl. 260-583.00p.

Chemical Construction Corporation: *See—*
Negra, John S.; Tourtellotte, John F.; and Warshaw, Abe, 3,737,396.

Chemische Werke Albeit Aktiengesellschaft: *See—*
Mohler, Werner; Reiser, Mario; and Popendiker, Kurt, 3,737,433.

Cheng, Sin-I, to Research Corporation. Device for sonic boom reduction and improving aircraft performance. 3,737,119, Cl. 244-1.00n.

Chevaugeon, Rene J.; and Smith, Russell M., to General Electric Company. Wheel slip control system. 3,737,745, Cl. 318-52.000.

Cheze, Bernard J., to Potain Poclain Materiel. Method of detecting an overstepping of a maximum parameter admissible for the operation of a machine. 3,737,888, Cl. 340-267.00r.

Chezem, Jimmie A. Door stop. 3,737,186, Cl. 292-338.000.

Chi, Ko-Chuan: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,231.

Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, to Tanabe Seiyaku Co., Ltd. Racemization of optically active ammonium N-acetyl-α-aminophenylacetate. 3,737,454, Cl. 260-518.00r.

Chicago Dryer Company: *See—*
Kamberg, Eduard F., 3,736,678.

Childers, Carroll Dean, to United States of America, Navy. Dual mode shotgun. 3,736,839, Cl. 89-128.000.

Childress, Jay W.: *See—*
Ruleff, Robert L.; Lee, William P., II; and Childress, Jay W., 3,737,314.

Chisholm, Douglas S.: *See—*
Schrenk, Walter J.; Cleereman, Kenneth J.; Chisholm, Douglas S.; and Alfrey, Turner, Jr., 3,737,263.

Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
Tsutsumi, Shigeru; and Sonoda, Noboru, 3,737,428.
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, 3,737,844.

Christensen, George L., to Martin-Marietta Aluminum, Inc. Cartridge flash hole inspection apparatus. 3,736,793, Cl. 73-38.000.

Chrom-Tronics, Inc.: *See—*
Jones, Harry S., 3,737,229.

Churchill, John P.; and Thompson, Tommy Lewis, to Life Support, Inc. High pressure oxygen generator. 3,737,287, Cl. 23-281.000.

Ciba-Geigy A.G.: *See—*
Avis, Victor Arthur; and Matthews, Albert John, 3,737,352.
Grossmann, Walter; and Thaddey, Kurt, 3,736,856.

Ciba-Geigy Corporation: *See—*
Kuhnis, Hans Herbert; and Denss, Rolf, 3,737,538.

Cielaszyk, Edward F.; Lundin, Robert S.; and Stellwagen, Frank W., to General Time Corporation. Quartz crystal controlled stepper motor. 3,737,746, Cl. 318-130.000.

Cillis, David W.: *See—*
Atkinson, Joseph G.; and Cillis, David W., 3,737,464.

Cincinnati Milacron Heald Corporation: *See—*
Robillard, Edward G.; and Lizotte, Robert H., 3,736,704.

Cities Serivce Oil Company: *See—*
Darby, Embree L., 3,737,189.

Clark, George B., to Aqua-Chem, Inc. Membrane module. 3,737,043, Cl. 210-321.000.

Clark, J. L., Manufacturing Co.: *See—*
Foster, John A., 3,737,129.

Clark, Jared W.; and Rectenwald, Charles E., to Union Carbide Corporation. Azeotropic composition. 3,737,388, Cl. 252-171.000.

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Clark, Jared W.; and Rectenwald, Charles E., to Union Carbide Corporation. Azeotropic composition. 3,737,390, Cl. 252-171.000.

Clark, John R. Tire traction device. 3,736,970, Cl. 152-226.000.

Claus, Hartmut, to Sachsenwerk Licht- und Kraft-Aktiengesellschaft. Electric switch material based on a blend of three epoxy components. 3,737,403, Cl. 260-37.0ep.

Cleereman, Kenneth J.: *See—*
Schrenk, Walter J.; Cleereman, Kenneth J.; Chisholm, Douglas S.; and Alfrey, Turner, Jr., 3,737,263.

Clement, Clement. Articulated and steerable snow sled. 3,737,172, Cl. 280-22.000.

Clement, Clyde H.: *See—*
Clement, Clyde H.; and Larson, Leland B., 3,737,835.

Clement, Clyde H.; and Larson, Leland B., 50% to Clement, Clyde H. and 50% to Larson, Leland B. Self-ejecting line plug. 3,737,835, Cl. 339-45.00r.

Clemett, Edwin F., Jr., to Mc Cord Corporation. Ash tray assembly. 3,737,207, Cl. 312-246.000.

Clifford, James D.: *See—*
Nicholas, Robert D.; and Clifford, James D., 3,737,317.

Coal Tar Research Association, The: *See—*
Sharp, John Alan; Dean, Raymond Ernest; and Fielding, Michael, 3,737,466.

Coats Company, Inc., The: *See—*
Strang, Elmer J.; and Scott, Ray A., 3,736,975.

Cobb, Raymond L., to Phillips Petroleum Company. Amino-substituted mercapto compounds and their preparation by the reaction of aminothiosulfuric acids and aziridines. 3,737,446, Cl. 260-453.00r.

Cobb, Richard D. Dust flap for trailers and trucks. 3,737,176, Cl. 280-154.50r.

Coffin, Robert E.; and Piacente, Anthony N., to Congoleum Industries, Inc. Apparatus for finishing resionous surface coverings. 3,737,274, Cl. 425-364.000.

Cogsdill Tool Products, Inc.: *See—*
Kalen, Stuart E., 3,736,633.

Cohen, Kenneth W., to Bailey Meter Company. Digital valve. 3,736,960, Cl. 137-625.600.

Cole, Martin; and Rolinson, George Newbolt, to Beecham Group Limited. Antibiotic complex MM4462 and process preparing same. 3,737,523, Cl. 424-122.000.

Coleman, Marvin H.; and Leiberitz, Walter A., to Conveyor Systems, Inc. Conveyor system. 3,737,019, Cl. 198-2.000.
Coleman, Michael G.: *See—*
Grenon, Lawrence A.; and Coleman, Michael G., 3,737,704.
Coles, Willard D., to United States of America, National Aeronautics and Space Administration. Twisted multifilament superconductor. 3,737,824, Cl. 336-200.000.
Colgate-Palmolive Company: *See—*
Dillarstone, Alan, 3,736,668.
Collier, Paul Arthur, to Parsons Chain Company Limited. Conveyor chain assemblies. 3,737,023, Cl. 198-175.000.
Collineau, Claude Jean, to Coulter Electronics, Inc. Pulse count correction method and apparatus. 3,737,633, Cl. 235-92.0pl.
Collingwood, George Howard: *See—*
Turner, Garland Linwood; Schuettler, Ralph William; and Collingwood, George Howard, 3,737,505.
Colobert, Louis Eugene Marie: *See—*
Ebel, Jean Pierre; Colobert, Louis Eugene Marie; and Louisot, Pierre, 3,737,524.
Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
Newman, Douglas A., 3,736,873.
Commercial Solvents Corporation: *See—*
Hunsucker, Jerry Hoyt, 3,737,408.
Commissariat a l'Energie: *See—*
Dufayet, Jean-Pierre, 3,737,764.
Masson, Maurice; and Warlop, Raymond, 3,737,770.
Commissariat a l'Energie Atomique: *See—*
Debergh, Philippe; and Lagrange, Maurice, 3,737,372.
Communications Satellite Corporation: *See—*
Dostis, Irving, 3,737,784.
Compagnie Francaise des Peboler: *See—*
Azalbert, Jean P.; Giraud, Adrien; and Marquaire, Roger Andre, 3,736,754.
Compagnie Generale d'Electricite: *See—*
Aupoix, Marcel; Franckhauser, Francois Moisson; and Royet, Jean, 3,736,656.
Compagnie Generale des Etablissements Michelin, raison Sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,736,974.
Compagnie Industrielle des Telecommunications: *See—*
Oswald, Jacques; and Rainsard, Yves, 3,737,783.
Compo-Tek Corporation: *See—*
Saucier, David O., 3,736,609.
Concast AG: *See—*
Stockinger, Walter, 3,736,977.
Conco Inc.: *See—*
Hathcock, James S., Jr., 3,737,056.
Congoleum Industries, Inc.: *See—*
Coffin, Robert E.; and Piacente, Anthony N., 3,737,274.
Conner, Robert J., to Phillips Petroleum Company. Neckforming plug with embedded diamond particles. 3,737,273, Cl. 425-326.000.
Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., 3,736,846.
Contratto, James, to U. S. Industries, Inc. Adapter for three conductor electrical power distribution track. 3,737,834, Cl. 339-2.10r.
Control Concepts Inc.: *See—*
Zeuner, Kenneth W., 3,737,141.
Conveyor Systems, Inc.: *See—*
Coleman, Marvin H.; and Leiberitz, Walter A., 3,737,019.
Cook, Gerald H.; and Downey, Rogers B., to Polaroid Corporation. Motion picture film pressure plate assembly. 3,737,218, Cl. 352-78.00r.
Cooper, Charles W.: *See—*
Epstein, Michael M.; and Cooper, Charles W., 3,737,355.
Cooper, Edward: *See—*
Wolfer, Allan J.; and Cooper, Edward, 3,737,853.
Cooper, George P., to North American Rockwell Corporation. Radar modulator. 3,737,679, Cl. 307-252.00j.
Cooper, James Joseph, Jr., to International Telephone and Telegraph Corporation. Insulating cover for electrical connectors. 3,737,559, Cl. 174-138.00f.
Cooper Manufacturing Company, Inc.: *See—*
Peterson, Clifford D., 3,736,729.
Cooper, Paul, to TRW Inc. High flow pump impeller for low net positive suction head and method of designing same. 3,737,249, Cl. 416-179.000.
Coppens, Matheus J. M.; and Steen, Heinrich J., to Koninklijke Emballage Industrie Van Leer N.V. Seam connection and method for manufacturing the seam. 3,736,893, Cl. 113-120.00y.
Cordi, Vincent A.; and Nickel, Ted Y., to International Business Machines Corporation. Implementation of the least recently used (LRU) algorithm using magnetic bubble domains. 3,737,881, Cl. 340-174.0tf.
Corning Glass Works: *See—*
Borrelli, Nicholas F., 3,737,236.
Dumbaugh, William H., Jr.; Flannery, James E.; and Megles, John E., 3,737,294.
Maurer, Robert D., 3,737,293.
Steinberg, David Ronald, 3,737,700.
Corning Glass Works Corporation: *See—*
Keck, Donald B.; Schultz, Peter C.; and Zimar, Frank, 3,737,292.
Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, to Gruppo Lepetit S.p.A. 2-Pyrrolidine acrylamide. 3,737,439, Cl. 260-326.300.
Corrodi, Hans Rudolf; and Fuxe, Kjell Gunnar, to Science Union et Cie, Societe Francaise de Recherche Medicale. Pharmaceutical compositions and methods for the treatment of Parkinsonism. 3,737,541, Cl. 424-251.000.
Corson, Ben: *See—*
Kessler, Frank L.; and Kendall, Stephen F., 3,736,599.
Cosmo Toys Manufactory Limited: *See—*
Kiizumi, Rikihachiro, 3,736,700.
Cotey, John, to Medspecs, Inc. Speculum latching mechanism. 3,736,919, Cl. 128-17.000.
Cottle, John E., to Phillips Petroleum Company. Separation and recovery of perhalogenated fluorocarbons. 3,737,470, Cl. 260-653.000.
Coulter Electronics, Inc.: *See—*
Collineau, Claude Jean, 3,737,633.
Couman & Shurtleff, Inc.: *See—*
Reimels, Harry G., 3,736,935.
Covell, Gerald P., to Uniroyal Inc. Cutting machine blade sharpener. 3,736,825, Cl. 83-174.000.
Cox, James R.; and Turner, Carlon N., to United States of America, Navy. Roller path inclination compensator. 3,737,630, Cl. 235-61.50e.
Cox, John Michael; and Ghosh, Ranajit, to Imperial Chemical Industries Limited. Process for making compounds containing the sulfonyl cyanide group. 3,737,457, Cl. 260-545.00r.
Crabaugh, Kenneth G.; and Templeman, Arthur R., to Vendo Company, The. Selectable price-volume dispensing apparatus. 3,736,809, Cl. 74-483.0pb.
Cranston, Benjamin Howell, to Western Electric Company, Incorporated. Explosive bonding of workpieces. 3,736,654, Cl. 29-470.100.
Cribb, Herbert E., to United States of America, National Aeronautics and Space Administration. Collapsible high gain antenna. 3,737,912, Cl. 343-880.000.
Crisafulli, Peter G., Sr. Inductor current relay switch. 3,736,913, Cl. 123-148.00e.
Crommelijnck, Herman. Device for the manufacture of a cooked delicacy. 3,736,862, Cl. 99-353.
Croset, Michel; and Nouailles, Noel, to SESCOSEM-Societe Europeenne des Semi Conducteurs et de Microelectronique. Novel method of manufacturing protective oxide films, and structures embodying such films. 3,737,341, Cl. 117-212.000.
Crosfield Electronics Limited: *See—*
Aughton, John E., 3,737,225.
Cross, Laurence Allan, Jr., to Randomatic Data Systems, Inc. Console for random access filing equipment or the like having push button display. 3,737,898, Cl. 340-381.00r.
Crosswhite, Bert. Washing and sanitizing apparatus for carts such as hospital carts. 3,736,948, Cl. 134-95.000.
Crostic, Sharon M.; and Froelich, William E. Abrading device for attachment to electric knife drive. 3,736,614, Cl. 15-97.00r.
Crucible Inc.: *See—*
Byrnes, Charles J.; and Vassilaros, George L., 3,737,306.
C.S.S. Machine and Tool Company, Inc.: *See—*
Faurl, Alfhonse W.; and Caldwell, Harold L., 3,737,296.
CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques: *See—*
Herrbach, Paul; and Breton, Alain, 3,737,504.
Cubic Corporation: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,737,057.
Cuenca, Eduardo. Visual typesetter. 3,736,855, Cl. 95-4.500.
Culler, J. Glenn, to KMS Industries, Inc. Apparatus for calculating exposure times and subtractive color filtration in dark room photography. 3,737,224, Cl. 355-32.000.
Cunningham, Francis V., to Joslyn Mfg. and Supply Co. Cable termination apparatus with rigid stress relief assembly and conductive seal. 3,737,556, Cl. 174-19.000.
Cupp, Frederick B.; and Camp, Gary Van, to EDMAC Associates, Inc. Bi-phase data recorder. 3,737,895, Cl. 340-347.0dd.
Cutaia, Alfred, to International Business Machines Corporation. Character video enhancement system. 3,737,855, Cl. 340-146.3ag.
Cutchen, John T.; Haertling, Gene H., Jr.; and Harris, James O., Jr., to United States of America, Atomic Energy Commission. Ferroelectric-type optical filter. 3,737,211, Cl. 350-160.00r.
Cuthbert, Laurence Geoffrey; and Anderson, Raymond John, to International Standard Electric Corporation. Analog to digital converter. 3,737,897, Cl. 340-347.0ad.
Cuypers, Martinus Hubertus: *See—*
Horowitz, Alexandre; Beusink, Bernard Joseph; and Cuypers, Martinus Hubertus, 3,736,803.
Cyr, Gilman N.: *See—*
Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,737,545.
Dahl, Ernest A., Jr. Microfilm holder. 3,736,680, Cl. 40-105.500.
Daimler-Benz Aktiengesellschaft: *See—*
Worner, Gunter, 3,737,016.
D'Alelio, Gaetano F. Reactive epoxy-onium catalysts for synthesis of polyoxazolidones. 3,737,406, Cl. 260-47.0ep.
Dalrymple, William P. Coupling assembly. 3,737,014, Cl. 192-30.00r.
Danfoss A/S: *See—*
Hallgreen, Knud Julius, 3,737,622.
Leffers, Hans Ulrik, 3,736,639.
Darby, Embree L., to Cities Serivce Oil Company. Reversible tie-back tool. 3,737,189, Cl. 294-86.340.
Daren, Stephen: *See—*

Berger, Gila; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,737,469.
Darmstadt, Jurgen Paetow, to Hottinger Baldwin Messtechnik GmbH. Creep-compensating strain gages. 3,737,827, Cl. 338-2.000.
Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe circuit arrangements. 3,737,806, Cl. 331-417.00r.
Dart Industries, Inc.: *See*—
Arnold, Melvin R.; and Schrage, Albert, 3,737,395.
Data General Corporation: *See*—
Austin, James E. D., 3,737,728.
Gruner, Ronald H., 3,737,866.
Davies, Leonard J. L., to USM Corporation. Apparatus for feeding particulate material. 3,737,074, Cl. 222-193.000.
Davis, Bernard T., 25% to Wells, Raymond C. and 25% to Wells, Ralph E. Demand controller. 3,737,671, Cl. 307-126.000.
Davis, Oliver Thurston; and Jones, Norman R. Electrical filtered air heater. 3,737,626, Cl. 219-360.000.
D.D.I. Communicat Inc.: *See*—
Huebner, Werner P. E.; and Long, Robert G., 3,737,677.
de Beaulieu, Henri Philippe: *See*—
Ghilardi, Guiliana; Kalopissis, Gregoire; de Beaulieu, Henri Philippe; and Abegg, Jean-Louis, 3,736,944.
De Jager, Donald, to Eastman Kodak Company. Six element unit magnification lens. 3,737,215, Cl. 350-215.000.
De Neefe, John H.; Pistel, Conrad; and Schwarzbeck, John G., to Western Gear Corporation. Rapid retracting torque activated drive roller unit for conveyor systems. 3,737,022, Cl. 198-127.00r.
De Spautz, Joseph F.: *See*—
O'Hagan, Robert M.; De Spautz, Joseph F.; Carroll, James E., Jr.; and Sorensen, Richard H., 3,737,902.
De Vries, James H., to Sarns, Inc. Peristaltic pump construction. 3,737,256, Cl. 417-477.000.
De Vries, James H., to Sarns, Inc. Roller control for a peristaltic pump construction. 3,737,257, Cl. 417-477.000.
De Vries, Menno, to Stamicarbon N.V. Process for the preparation of a dialkyl magnesium compound. 3,737,393, Cl. 252-431.00r.
Dean, Raymond Ernest: *See*—
Sharp, John Alan; Dean, Raymond Ernest; and Fielding, Michael, 3,737,466.
Debergh, Philippe; and Lagrange, Maurice, to Commissariat a l'Energie Atomique. Installation for surveying the displacement of a structure in a nuclear reactor. 3,737,372, Cl. 176-19.00r.
Debski, Thomas R.: *See*—
Gaudio, Joseph G.; and Debski, Thomas R., 3,737,812.
Decker, John J.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Method of making dark heater coatings including tungsten. 3,737,342, Cl. 117-217.000.
Decker, Karl: *See*—
Keppler, Dietrich; Lesch, Rainer; Reutter, Werner; and Decker, Karl, 3,737,525.
Deegan, Thomas Edward: *See*—
Lindburg, Norman Lee; Bonnette, Richard Arthur; and Deegan, Thomas Edward, 3,737,706.
Deere & Company: *See*—
Cantral, John Isaac; and Taube, Robert Otto, 3,736,988.
Hansen, Harold Valentine, 3,736,731.
Jennings, Teari James; Vogellaar, Bernard Francis; and Lamp, Robert, 3,736,732.
Kress, James Henry; Michael, Richard Arlo; and Madson, Lyle Robert, 3,736,813.
Kulak, John; and Kirkpatrick, Kenneth Lawrence, 3,736,735.
Myers, Herbert Arthur, 3,736,735.
Myers, Herbert Arthur, 3,736,736.
Roth, Wolfgang, 3,736,753.
Deering Milliken Research Corporation: *See*—
Klein, Norman E., 3,737,262.
Deerkoski, Leonard F., to United States of America, National Aeronautics and Space Administration. Signal-to-noise ratio determination circuit. 3,737,781, Cl. 325-363.000.
Defibrator Aktiebolag: *See*—
Johansson, Johan Gunnar Inge, 3,737,109.
Dehner, Otto: *See*—
Sagner, Gerhard; and Dehner, Otto, 3,737,536.
Deitrick, Rollin E., to Western Electric Company, Incorporated. Feeding device for cylindrical tubing. 3,737,072, Cl. 221-203.000.
Delfin, Irwin: *See*—
Hickory, Roy E.; McFadden, Robert N.; and Delfin, Irwin, 3,737,220.
Delle-Alsthom: *See*—
Thuries, Edmond; and Joly, Francois, 3,737,819.
Deltrol Corporation: *See*—
Harris, John L., 3,736,799.
Harris, John L., 3,737,820.
Demag Aktiengesellschaft: *See*—
Reth, Erich; and Uthmann, Walter, 3,737,021.
Deml, Reinhold: *See*—
Wick, Richard; Bestenreiner, Friedrich; and Deml, Reinhold, 3,737,574.
DeMoss, Dean L., to Minnesota Mining and Manufacturing Company. Flat magnetic heads. 3,737,582, Cl. 179-100.20c.
Denss, Rolf: *See*—
Kuhnis, Hans Herbert; and Denss, Rolf, 3,737,538.
Dent, Michael, to Dunlop Holdings Limited. Toothed belts. 3,736,805, Cl. 74-237.000.
Dentskhe Edelstahhwerke Aktiengesellschaft: *See*—
Frehn, Fritz, 3,737,290.
Derauf, Richard E., to Hoerner Waldorf Corporation. Reclosable container. 3,737,095, Cl. 229-51.0tc.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Schreyer, Gerd; Theissen, Ferdinand; and Weiberg, Otto, 3,737,519.
DeVries, Edward R., to Unifilm Corporation. Flatting agents, flatting compositions and method for their preparation. 3,737,402, Cl. 260-29.2tn.
DeYoe, Jay W. De, Jr. Tether ball paddle having launching stations on each face. 3,737,164, Cl. 273-98.000.
Diablo Systems, Inc.: *See*—
Gabor, Andrew, 3,737,896.
Dichiara, Anthony J. Quick-connect vent tube structure. 3,736,966, Cl. 141-392.000.
Dickensheets, William E.; and Nowroski, Alvin P., to Ford Motor Company. Carburetor emission control device. 3,736,915, Cl. 123-198.0dc.
Dietrich, Bernhard; and Huber, Erich, to Schaltbau Gesellschaft mbH. Single switch with multiple transverse actuation. 3,737,604, Cl. 200-153.0lb.
Dietrich, Roland, to Kalle Aktiengesellschaft. Photopolymerizable copying composition. 3,737,320, Cl. 96-115.00p.
Difley, Charles R.: *See*—
Bottas, Michael J.; and Difley, Charles R., 3,736,864.
Dillarstone, Alan, to Colgate-Palmolive Company. Device for dryer applied textile conditioners. 3,736,668, Cl. 34-60.000.
Dillon, Tony R. Method of producing an ornamental concrete surface. 3,737,511, Cl. 264-256.000.
Dimmick, Roger F.: *See*—
Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., 3,737,097.
Dinges, Wolfgang, to Lacoray S.A. Apparatus for monitoring liquid flow. 3,737,886, Cl. 340-244.00r.
Dingler, Henry Albert. Storage battery casing slicer. 3,736,823, Cl. 83-165.000.
Dinsdale, Vern Thomas: *See*—
Roberts, Henry J.; Thurston, James R.; and Dinsdale, Vern Thomas, 3,736,877.
Dobson, Ora B., to Apparatus for removing tassels. . 3,736,730, Cl. 56-63.000.
Dodman, David; Pearson, Kenneth William; and Woolley, John Mathers, to Imperial Chemical Industries Limited. Catalytic carbonylation of aromatic nitroso compounds to prepare corresponding isocyanates. 3,737,445, Cl. 260-453.0pc.
Dohse, Ruthard; and Frank, Klaus, to Elektro-Thermit GmbH. Guide element for pivoting rails. 3,737,657, Cl. 246-392.000.
Dohse, Ruthard; Edeling, Curt; and Eisenmann, Josef, to Elktro-Thermit GmbH. Deflecting device with gaps locked in a wedge-type manner. 3,737,658, Cl. 246-448.000.
Doi, Yasuhiko: *See*—
Nakamura, Kitamaro; and Doi, Yasuhiko, 3,737,734.
Dolby Laboratories, Inc.: *See*—
Dolby, Ray Milton; and Robinson, David Peter, 3,737,678.
Dolby, Ray Milton; and Robinson, David Peter, to Dolby Laboratories, Inc. Limiters for noise reduction systems. 3,737,678, Cl. 307-237.000.
Dolfing, Thale; and Lolkema, Jan, said Lolkema assor. to Scholten-Honig Research N.V. Process for treating non-agricultural grounds. 3,736,758, Cl. 61-36.00r.
Dombro, Robert A., to Universal Oil Products Company. Halogenated methanonaphthalene and dimethanophenanthrene compounds. 3,737,468, Cl. 260-648.00c.
Donnelly, Thomas S., to American Aviation Corporation. Circuit overvoltage protector. 3,737,725, Cl. 317-16.000.
Doran, Thomas J.; Wagner, Melvin P.; and Stevens, Henry C., to PPG Industries, Inc. Vulcanized rubber comprising a siliceous pigment, a rubber and an organic coupling agent having an active olefinic linkage. 3,737,334, Cl. 106-288.00q.
Dorey, Howard Anthony, to Solartron Electronic Group Limited, The. Triple-slope analog-to-digital converters. 3,737,892, Cl. 340-347.0nt.
Dorman, Stephen C.: *See*—
Brokke, Mervin E.; Menn, Julius J.; and Dorman, Stephen C., 3,737,532.
Dostis, Irving, to Communications Satellite Corporation. Circuits with broad band flat frequency responses using directional filters. 3,737,784, Cl. 325-436.000.
Dover Corporation: *See*—
Smallwood, Donald L., 3,736,950.
Dow Chemical Company, The: *See*—
Beale, Alvin Francis, Jr., 3,737,414.
Grant, Charles H., 3,737,350.
Howard, William L.; and Burger, Joanne D., 3,737,463.
Kamena, Karl W., 3,737,499.
Rigterink, Raymond H., 3,737,527.
Schrenk, Walter J.; Cleereman, Kenneth J.; Chisholm, Douglas S.; and Alfrey, Turner, Jr., 3,737,263.
Downey, Rogers B.: *See*—
Cook, Gerald H.; and Downey, Rogers B., 3,737,218.
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-diaryl-pyridyl-methyl-imidazoles, salts thereof as antifungal agents. 3,737,531, Cl. 424-263.000.

Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-substituted imadazoles and their salts. 3,737,548, Cl. 424-273.000.

Dreibholz, Egon, to Frobana, Firma. Apparatus for pressing treatment of shoe. 3,736,611, Cl. 12-54.200.

Dreisin, Alexander, to Allis-Chalmers Corporation. Internally cooled unit injector. 3,737,100, Cl. 239-89.000.

Dresher, Seymour, to Ingersoll-Rand Company. Soil and pavement compacting machine. 3,737,243, Cl. 404-122.000.

Drew, Norman J. Test and calibrating device for intra-ocular pressure instruments. 3,736,789, Cl. 73-1.00b.

Drinkwater, James M. Toilet-bowl disinfectant-detergent holder and dispenser. 3,736,600, Cl. 4-231.000.

Driskill, Berl. Electrical game apparatus. 3,737,168, Cl. 273-156.000.

Du Bell, Thomas L.; and Taylor, Jack R., to General Electric Company. Recirculating annular slot fuel/air carbureting system for gas turbine engine combustors. 3,736,746, Cl. 60-39.360.

Du Pont de Nemours, E. I., and Company: *See*—
Blake, Ralph Kingsley, 3,736,871.
Fielding, Max Jae, 3,737,298.
Jenner, Edward L., 3,737,516.
Weir, Jackie A., 3,737,508.

Duane, Bernard H.: *See*—
Wood, Myrick R.; Duane, Bernard H.; and Lessor, Delbert L., 3,736,798.

Dubner, Benjamin B. Cushion shoe innersole construction. 3,736,673, Cl. 36-214.000.

Duck, Edward William: *See*—
Porter, David; Campbell, William Shore; and Duck, Edward William, 3,737,488.

Dufayet, Jean-Pierre, to Commissariat a l'Energie. Eddy-current test appartus for detection of flaws in a metal seal placed within an electrically conductive tube. 3,737,764, Cl. 324-40.000.

Duke University, Inc.: *See*—
Tosteson, Daniel C., 3,737,379.

Duling, Irl N.: *See*—
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,737,477.

Dumbaugh, William H., Jr.; Flannery, James E.; and Megles, John E., to Corning Glass Works. Method for making multi-layer laminated bodies. 3,737,294, Cl. 65-33.000.

Duncan, George I.: *See*—
Mees, Robert D.; and Duncan, George I., 3,737,823.

Duncan, Leon L., to Zero Manufacturing Company. Butterfly valve. 3,737,144, Cl. 251-307.000.

Dunipace, Russell E., to Owens-Illinois, Inc. and Method of forming plastic tubular articles. . 3,737,501, Cl. 264-159.000.

Dunlop, Andrew P.: *See*—
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,737,430.

Dunlop Company Limited, The: *See*—
Askam, John F.; and Goodwin, Charles, 3,737,356.

Dunlop Holdings Limited: *See*—
Dent, Michael, 3,736,805.

Dunn, Howard E., to Phillips Petroleum Company. Olefin dimerization with nickel complexes. 3,737,474, Cl. 260-683.15d.

Dunnican, Ward G.; and Sutryn, Caroll S., to Becton, Dickinson & Company. Hypodermic needle destruction device. 3,736,824, Cl. 83-167.000.

Durand, Alex A., to Falk Corporation, The. Worktable extension and supporting structure. 3,736,840, Cl. 90-58.00b.

Dutro, Lyle V. Counter for a stream of overlapped articles. 3,737,666, Cl. 250-223.00r.

Dynamit Nobel Aktiengesellschaft: *See*—
Bucklishch, Ludwig, 3,736,875.

Easterling, Gene B., to Caterpillar Tractor Company. Outrigger boom for earthworking vehicles. 3,736,987, Cl. 172-4.500.

Easterling, Mahlon F.: *See*—
United States of America, National Aeronautics and Space Administration, 3,737,776.

Eastern Company, The: *See*—
Pastva, John V., Jr., 3,737,183.

Eastman Kodak Company: *See*—
Baptista, John L.; and Smith, Albert C., Jr., 3,737,312.
Beach, David E., 3,736,854.
Borden, Douglas G., 3,737,319.
De Jager, Donald, 3,737,215.
Ewald, William Philip, 3,736,852.
Harter, James E.; and Rosenburgh, Norman J., 3,737,227.
Harvey, Donald M., 3,737,315.
Martens, Richard H.; and Zaffrann, Ralph D., 3,736,872.
Nicholas, Robert D.; and Clifford, James D., 3,737,317.
Rosecrants, William J.; and Pomeroy, Frederick A., 3,737,313.
Salminen, Ilmari Fritiof; and Loria, Anthony, 3,737,316.
Straley, James M.; and Wallace, David J., 3,737,424.

Eastman Kodak Company, mesne: *See*—
Wolfer, Allan J.; and Cooper, Edward, 3,737,853.

Ebel, Jean Pierre; Colobert, Louis Eugene Marie; and Louisot, Pierre, to Ugine Kuhlmann. Medicaments derived from nucleic acids, processes for their preparation and their use. 3,737,524, Cl. 424-180.000.

Ebnother, Anton: *See*—
Jucker, Ernst; Ebnother, Anton; and Bastin, Jean-Michel, 3,737,544.

Eckenbrecht, Robert Roy, to GTE Sylvania Incorporated. Linearity correction apparatus in a flying spot scanner system. 3,737,570, Cl. 178-7.200.

Edeling, Curt: *See*—
Dohse, Ruthard; Edeling, Curt; and Eisenmann, Josef, 3,737,658.

Eden, Jamal S., to Goodrich, B. F., Company, The. Catalytic process for unsaturated acids. 3,737,394, Cl. 252-435.000.

Edixhoven, Gerardus Hendrikus, to Hunter, Douglas, International N.V. Ladder mechanism for an assembling apparatus for the manufacture of completely or partly finished packages of slats for venetian blinds. 3,736,631, Cl. 29-24.500.

EDMAC Associates, Inc.: *See*—
Cupp, Frederick B.; and Camp, Gary Van, 3,737,895.

Edson, David D., to Raytheon Company. Directional transducer system. 3,737,841, Cl. 340-2.000.

Edwards, Beverly C. D., Jr.: *See*—
Carstens, Daniel K.; and Edwards, Beverly C. D., Jr., 3,736,760.

Eelin, Juliett P.: *See*—
Hickory, Roy E.; McFadden, Robert N.; and Delfin, Irwin, 3,737,220.

Eftax, Daniel S. P.: *See*—
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,737,430.

Egan, Richard R.: *See*—
Throckmorton, Peter E.; Aelony, David; Egan, Richard R.; and Otey, Felix H., 3,737,426.

Ehrlich, Shelton; Bishop, John W.; and Robison, Ernest B., to United States of America, Interior. System for starting a fluidized bed boiler. 3,736,908, Cl. 122-4.00d.

Eickhorst, Melvin F.: *See*—
Arthur, Ronald H.; Eickhorst, Melvin F.; and Hansen, Earl A., 3,737,601.

Eilenberger, Stanley D., to Progressive Products Corporation. Electric grill with a thin film heating element. 3,737,624, Cl. 219-525.000.

Eilingsfeld, Heinz; and Scheuermann, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of hydroxybenzonitriles. 3,737,449, Cl. 260-465.000.

Eisenmann, Josef: *See*—
Dohse, Ruthard; Edeling, Curt; and Eisenmann, Josef, 3,737,658.

Electro-Optics Devices Corporation: *See*—
Lehrer, Stanley; Robertson, Raymond A.; and Holme, John C., 3,737,856.

Electronic Flag Poles, Inc.: *See*—
Schmit, Theodore F., 3,737,749.

Elektro-Thermit GmbH: *See*—
Dohse, Ruthard; and Frank, Klaus, 3,737,657.
Guntermann, Hans, 3,736,878.

Elkhart Brass Manufacturing Co., Inc.: *See*—
Thompson, William Stanley, 3,736,952.

Elkins, Samuel M. Water-immersible electrical heating device. 3,737,621, Cl. 219-318.000.

Elktro-Thermit GmbH: *See*—
Dohse, Ruthard; Edeling, Curt; and Eisenmann, Josef, 3,737,658.

Ellinger, Rudolph H.: *See*—
Kohl, Willibald F.; Sourby, John C.; and Ellinger, Rudolph H., 3,737,330.

Ellis, Alfred Brian Edwin; and Bunton, Geoffrey Vernon, to Marconi Company Limited, The. Keyboard. 3,737,668, Cl. 250-220.00r.

Ellis Corporation: *See*—
Toth, Alex, 3,737,140.

Elmatic Corporation: *See*—
Whitehead, George B., 3,737,837.

Elox Inc.: *See*—
Bell, Oliver A., Jr., 3,737,615.

Elsner, Uwe; and Wochnowski, Waldemar, to Hauni-Werke Korber & Co., KG. Method and apparatus for comminuting and drying of tobacco leaves. 3,736,942, Cl. 131-22.00r.

Email Limited: *See*—
Baker, Colin J., 3,736,772.

Emeny, George B. Vertical sump pump. 3,737,255, Cl. 417-424.000.

Emerman, Allan, to Marce Cosmetics, Ltd. Face-lifting apparatus. 3,736,925, Cl. 128-76.00b.

Emerson Electric Co.: *See*—
Becker, Eilhard J., 3,737,606.

Emhart Corporation: *See*—
Lattke, Horst G., 3,736,723.

Enders, Edgar; and Stendel, Wilhelm, to Farbenfabriken Bayer Aktiengesellschaft. Ectoparasiticidally active 2-arylimino-1-alkyl lactams. 3,737,543, Cl. 424-267.000.

Endersz, Gyorgy Geza, to Telefonaktiebolaget L M Ericsson. Injection phase locking device in an FM-transmitter for a self-oscillating oscillator modulated by a modulation signal. 3,737,777, Cl. 325-148.000.

Eneo, Takaya: *See*—
Inoje, Isaburo; Hanzawa, Teruo; and Eneo, Takaya, 3,737,318.

Energy Conversion Devices, Inc.: *See*—
Feinleib, Julius, 3,737,877.

Engel, Emmet R. Preparation of wine and cheese from milk. 3,737,325, Cl. 99-35.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Sawyer, Edgar W., Jr., 3,737,333.

Englehard, Helmut: *See*—
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, 3,737,420.

Ennis, Brian, to Asquith, William, Limited. Hydrostatic bearings. 3,736,818, Cl. 82-1.00r.

Enters, Edward W., to Gilson Bros. Co. Impeller. 3,736,674, Cl. 37-43.00r.

Epstein, Martin: *See—*
Schmitt, Edward Emil; and Epstein, Martin, 3,736,646.

Epstein, Michael M.; and Cooper, Charles W., to Standard Pressed Steel Co. Fastener improvement. 3,737,355, Cl. 156-293.000.

Erik, Ake John: *See—*
Carlsson, Lars Anders Fritz; Erik, Ake John; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,737,542.

Erwin, Floyd Dennis, to Hughes Aircraft Company. Modular digital processing equipment. 3,737,865, Cl. 340-172.500.

ESB Incorporated: *See—*
Beckman, Milo H., 3,736,655.

Esslinger, J. Eberspacher: *See—*
Kofink, Siegfried, 3,737,286.

Esso Production Research Company: *See—*
Lloyd, James R., 3,736,756.

Esso Research and Engineering Company: *See—*
Hochman, Jack M., 3,737,288.
Langer, Arthur W., Jr., 3,737,458.
Schutze, Henry G.; Williams, Herschel C.; Neureiter, Norman P.; and Bown, Delos E., 3,737,486.

Estabrook, Mark R.; and Treder, Wilfred F. W., to Barnes Drill Co. Mechanism for expanding a honing tool. 3,736,703, Cl. 51-165.800.

Esteban, Daniel Jacques, to International Business Machines Corporation. Narrow band digital filter. 3,737,636, Cl. 235-152.000.

Esteban, Daniel Jacques, to International Business Machines Corporation. Series-parallel multiplication device using modified two's complement arithmetic. 3,737,638, Cl. 235-164.000.

Esvang, Robert L.: *See—*
Kunz, Miles C.; and Esvang, Robert L., 3,737,772.

Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale; Delegation Ministerielle pour l'Armement Direction Technique des Armements Terrestres; Ateliers de Construction d'Issy-les-Moulineaux: *See—*
Melchoir, Jean, 3,736,752.

Ettel, Hubert. Method and apparatus for the continuous manufacture of chip board from binder and wood chips. 3,737,351, Cl. 156-62.200.

Evans, Jack, to United States of America, National Aeronautics and Space Administration. Nutation damper. 3,737,118, Cl. 244-1.0sa.

Evvard, John C.; McGannon, William J.; and Vargo, Donald J., to United States of America, National Aeronautics and Space Administration. Ophthalmic method and apparatus. 3,736,938, Cl. 128-305.000.

Ewald, William Philip, to Eastman Kodak Company. Camera battery checker. 3,736,852, Cl. 95-10.00c.

Fabri, Ernest S., to Rosenblad Corporation. Fixture for forming heating elements by hydraulic pressure. 3,736,783, Cl. 72-57.000.

Fackre, John S. Extensible camping trailer. 3,737,191, Cl. 296-27.000.

Fagin, Samuel L.: *See—*
Cantwell, Joseph R.; Fagin, Samuel L.; and Strell, Hyman, 3,736,791.

Fairchild Camera and Instrument Corporation: *See—*
Alcott, Graham J.; Bennett, Ian M.; and Secrest, Gerald R., 3,737,347.

Fairfield Manufacturing Company, Inc., mesne: *See—*
Knobloch, John C.; and Shepard, Ray M., 3,737,000.

Falk Corporation, The: *See—*
Durand, Alex A., 3,736,840.
Wellauer, Edward J., 3,736,812.

Fannin, Wayne V.; Gute, Loren R.; and Zimmerle, Wilbur J., to General Motors Corporation. Assembly method for hydraulic energy absorbers. 3,736,645, Cl. 29-422.000.

Faraguet, Claude; and Vaillier, Roland, to Schlumberger Instruments et Systemes. Very high impedance input circuit. 3,737,798, Cl. 330-85.000.

Farah Manufacturing Company: *See—*
McKeen, Leighton R., 3,736,894.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, 3,737,420.
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, 3,737,531.
Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 3,737,548.
Enders, Edgar; and Stendel, Wilhelm, 3,737,543.
Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, 3,737,336.
Sagner, Gerhard; and Dehner, Otto, 3,737,536.
Schnoring, Hildegard; Pampus, Gottfried; Schon, Leverkusen Nikolaus; and Witte, Josef, 3,737,337.

Farbwerke Hoechst Aktiengesellschaft: *See—*
Grimm, Richard; Herzog, Willi; and Lademann, Rudolf, 3,736,726.

Farley, Walter J. Window and panel frame structure. 3,736,717, Cl. 52-476.000.

Farmer, Kenneth R.; and Hanson, Larry G., said Hanson assor. to said Farmer, Larry G. Sign with bracket. 3,736,682, Cl. 40-125.00h.

Farmer, Larry G.: *See—*
Farmer, Kenneth R.; and Hanson, Larry G. (said Hanson assor. to said), 3,736,682.

Farmer, Rodney Clifford, to British Aircraft Corporation. Fuel containment. 3,737,125, Cl. 244-135.00b.

Farmer, Stanley E., to Cascade Corporation. Step volume control. 3,737,049, Cl. 212-35.00r.

Farrar, Trevor Alfred; Hodson, David George; and Peat, Derek, to National Research Development Corporation. Guiding apparatus for a stitching machine. 3,736,895, Cl. 112-203.000.

Fastway Fasteners, Inc.: *See—*
Schuplin, Jerome T., 3,737,128.

Fauri, Alfhonse W.; and Caldwell, Harold L., to C.S.S. Machine and Tool Company, Inc. Safety valve system for glassware forming machine. 3,737,296, Cl. 65-159.000.

Fechner, John T.: *See—*
Wood, Warren A.; and Fechner, John T., 3,736,967.

Federal-Mogul Corporation: *See—*
Glynn, David P., 3,737,169.

Feer, Ulrich P.: *See—*
Martin, Horst G.; and Feer, Ulrich P., 3,737,506.

Feinberg, Sheldon N. Method for preparing a specimen. 3,737,335, Cl. 117-72.000.

Feinleib, Julius, to Energy Conversion Devices, Inc. Data storage system with coarse and fine directing means. 3,737,877, Cl. 340-173.0lt.

Felker, Paul J., to Penetred Corporation. Roller die coiler with fixed helical mandrel. 3,736,784, Cl. 72-145.000.

Fell, Ferol S.; Long, William D.; and McMillen, Kenneth R., to Hesston Corporation. Three-row crop header for forage harvesters. 3,736,733, Cl. 56-98.000.

Feltzin, Joseph; and Tehrani, Nadji, to ICI America, Inc. Polyethers and polyurethanes. 3,737,391, Cl. 252-182.000.

Fencl, Vernon R.; and Roze, Albert, to Grotnes Machines Works, Inc. Method and apparatus for forming convoluted metal annulus. 3,736,787, Cl. 72-385.000.

Fenn, Lawrence E.,: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.

Fenton, Donald M., to Union Oil Company of California. Catalyzed reaction of an arylamine with an alkylamine to form an N-alkyl substituted arylamine. 3,737,459, Cl. 260-577.000.

Ferma Entwicklungswerk fur rationelle Fertigbaumethoden und Maschinenanlagen GmbH & Company, K.G.: *See—*
Schafer, Karl; and Hohne, Arthur, 3,737,265.

Fernandez, Carlos P., to McDonnell Douglas Corporation. Slat retract gate. 3,736,810, Cl. 74-491.000.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 3,736,702.

Fiddler, Theodore E. Clustered molds for injection molding two or more parts in pivotal condition in a frame. 3,737,270, Cl. 425-242.000.

Field, Milton M.: *See—*
Belknap, Donald J., 3,736,630.

Fielding, Max Jae, to Du Pont de Nemours, E. I., and Company. 2-Fluoro-3-phenyl-2-cyclobutenone as plant auxin. 3,737,298, Cl. 71-77.000.

Fielding, Michael: *See—*
Sharp, John Alan; Dean, Raymond Ernest; and Fielding, Michael, 3,737,466.

Fieser, Garland E.: *See—*
Hill, Frank W.; and Fieser, Garland E., 3,737,672.

Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel F., 3,737,421.

Firma Wernicke & Co., K.G.: *See—*
Reiner, Joser Rudolf; and Schramm, Gunther Paul Theodore, 3,737,238.

Fischer, James R.: *See—*
Sweeny, Keith H.; and Fischer, James R., 3,737,384.

Fitzgerald, James W.: *See—*
Haines, Richard F.; Fitzgerald, James W.; and Rositano, Salvadore A., 3,737,217.

Fitzhugh, Edward F., Jr.; Bush, Philip D.; and Seidel, Don C., to Republic Steel Corporation. Recovery of metallic nickel from solution of corresponding salt. 3,737,307, Cl. 75-109.000.

Flachbarth, Charles T.; Hadfield, Robert W.; and Harding, William H., to Textron, Inc. Carpet trim. 3,736,713, Cl. 52-221.000.

Flannery, James E.: *See—*
Dumbaugh, William H., Jr.; Flannery, James E.; and Megles, John E., 3,737,294.

Flash Technology Corporation of America: *See—*
Kearsley, Wayne A., 3,737,645.

Fletcher, Ralph P., Jr., to Boeing Company, The. Methods for forming wire bundles and an apparatus for carrying out the method. 3,736,652, Cl. 29-429.000.

Fletcher, Richard J.; and Fletcher, Robert I. Refrigerated surge tank for use with aerobic sewage digestion system. 3,737,382, Cl. 210-12.000.

Fletcher, Robert I.: *See—*
Fletcher, Richard J.; and Fletcher, Robert I., 3,737,382.

Flicker, Alcwyn: *See—*
May, Richard L.; and Flicker, Alcwyn, 3,736,831.

Flinth, Rune Nils Allan; and Nordstrom, Kjell Helge, to Safelink AB. Device for application of force. 3,736,998, Cl. 177-187.000.

Flouret, George Rogelio, to Abbott Laboratories. L-Histidyl-L-proline amide. 3,737,422, Cl. 260-112.500.

Fluid Controls, Inc.: *See—*
Swatty, Eugene E., 3,737,254.

Fluidtech Corporation: *See—*
Osheroff, Gene W., 3,737,098.
FMC Corporation: *See—*
Allan, George, 3,737,035.
Bottorf, Robert G., 3,736,997.
Burkitt, Sherman C., 3,737,032.
Carr, James P., 3,736,738.
Freiheit, Frederick E., 3,736,640.
Garrett, Michael R., 3,736,984.
Hait, James M., 3,736,865.
Miller, Thomas F.; and Zeck, Richard C., 3,737,025.
Wech, Robert J., 3,737,090.
FMC Corporation [C R P3737212 L8 W1:: *See—*
Burkhardt, Edward A., 3,737,204.
FMC, Inc.: *See—*
Maloney, John E., Jr.; and Zaccagni, Richard F., 3,737,127.
Foon, Alvin N., to AFCO Manufacturing Corporation. Telescoping support column. 3,737,134, Cl. 248-354.00r.
Foote, Daniel J., to Master Lock Company. Adjustable shackle key holder. 3,736,781, Cl. 70-456.00r.
Foote, James B., to Owens-Illinois, Inc. Inertia pump for liquids. 3,737,253, Cl. 417-241.000.
Ford Motor Company: *See—*
Banks, Eric John, 3,736,806.
Dickensheets, William E.; and Nowroski, Alvin P., 3,736,915.
Fordham, William D.; and Ansari, Hifzur R. Preparation of allylic terpenic alcohols. 3,737,467, Cl. 260-631.500.
Fordice, Michael W.: *See—*
Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., 3,737,455.
Formaini, Robert L.: *See—*
Cheema, Zafarullah K.; Formaini, Robert L.; and Ulmer, Harry L., 3,737,462.
Fosdick, Dale P., to Pittsfield Products, Inc. Tubular filter and method of making the same. 3,736,641, Cl. 29-163.50f.
Foseco International Limited: *See—*
Gregan, Daniel P., 3,737,138.
Foster, John A., to Clark, J. L., Manufacturing Co. Stand for supporting bags and the like. 3,737,129, Cl. 248-97.000.
Fothergill & Harvey, Limited: *See—*
Yates, Sidney, 3,736,965.
Fowler, John T.; and Raposa, Frank L., to United States of America, National Aeronautics and Space Administration. Parasitic suppressing circuit. 3,737,757, Cl. 321-11.000.
Fox, Daniel W., to General Electric Company. Copolycarbonate of bis (3,5-dimethyl-4-hydroxyphenyl) sulfone with bisphenol-A. 3,737,409, Cl. 260-49.000.
Franc, Charles. Packaging and mounting holders for illuminated gift packages, greeting cards and the like. 3,737,648, Cl. 240-10.60r.
Francis, Clara A.: *See—*
Francis, Richard J.; and Francis, Clara A., 3,737,910.
Francis, Marion D., to Procter & Gamble Company, The. Oral compositions for calculus retardation. 3,737,522, Cl. 424-49.000.
Francis, Richard J.; and Francis, Clara A. Multielement radio-frequency antenna structure having helically coiled conductive elements. 3,737,910, Cl. 343-895.000.
Franckhauser, Francois Moisson: *See—*
Aupoix, Marcel; Franckhauser, Francois Moisson; and Royet, Jean, 3,736,656.
Frank, Klaus: *See—*
Dohse, Ruthard; and Frank, Klaus, 3,737,657.
Frank, Robert G., to PPG Industries, Inc. Apparatus for press bending glass sheets. 3,737,297, Cl. 65-273.000.
Franke, Harold P.; and Franke, Raymond M. Light display. 3,736,832, Cl. 84-464.000.
Franke, Raymond M.: *See—*
Franke, Harold P.; and Franke, Raymond M., 3,736,832.
Frankenberg, Henry E., to Continental Can Company, Inc. Non-cylindrical container body maker. 3,736,846, Cl. 93-82.000.
Frankeny, Richard F.; and Tuttle, Joey K., to International Business Machines Corporation. Data generator. 3,737,637, Cl. 235-153.00a.
Frederiksen, Ronald A.: *See—*
Alsberg, Henry; and Frederiksen, Ronald A., 3,737,339.
Freeport Minerals Company: *See—*
Sennett, Paul S.; Olivier, James P.; and Ross, Sydney, 3,737,332.
Wiewiorowski, Tadeusz Karol; and Miller, David James, 3,737,513.
Frehn, Fritz, to Dentskhe Edelstahhwerke Aktiengesellschaft. Sintered titanium alloy. 3,737,290, Cl. 29-182.700.
Freiheit, Frederick E., to FMC Corporation. Method of forming a metal valve seat. 3,736,640, Cl. 29-157.10r.
Freund, James R., to Pennsylvania Pacific Corporation. Pallet. 3,736,885, Cl. 108-58.000.
Frey, Robert R., to Richardson-Merrell Inc. Treatment of arabinogalactan. 3,737,322, Cl. 99-23.000.
Frey, Sydney W., Jr.: *See—*
Gaskill, Robert E.; and Frey, Sydney W., Jr., 3,737,634.
Frick Company: *See—*
Garland, Milton W., 3,736,763.
Frieder, Leonard P., Jr., to Gentex Corporation. Adjustable buoyant jacket. 3,736,610, Cl. 9-342.000.
Frizane, Kenneth; and Trzyna, William A., to Zenith Radio Corporation. Series-connected power supply and deflection circuits utilizing a single shunt regulator. 3,737,572, Cl. 178-7.30r.
Frobana, Firma: *See—*
Dreibholz, Egon, 3,736,611.
Froelich, Dieter; and Welsch, Wolfgang, to Siemens Aktiengesellschaft. Method and device for scanning information content of an optical memory. 3,737,876, Cl. 340-173.0cr.
Froelich, William E.: *See—*
Crostic, Sharon M.; and Froelich, William E., 3,736,614.
Frosst, Charles E., & Co.: *See—*
Atkinson, Joseph G.; and Cillis, David W., 3,737,464.
Fuji Photo Film Co., Ltd.: *See—*
Kobayashi, Kingo; and Nishizawa, Koji, 3,737,509.
Urabe, Hitoshi; Nagao, Kimitioshi; and Takano, Masao, 3,737,228.
Yabe, Shinichi; and Katsumata, Mitsuru, 3,737,113.
Fuji Photofilm Co., Ltd.: *See—*
Yabe, Shinichi; and Okada, Tomi, 3,737,662.
Fuji Xerox Co., Ltd.: *See—*
Yamamoto, Kazumobu, 3,737,223.
Fujii, Setsuro: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuji; and Fujii, Setsuro, 3,737,443.
Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Device for selecting information. 3,737,875, Cl. 340-173.0lm.
Fujino, Nobuhiro; and Kajiwara, Hitachi, to Hitachi, Ltd. Thrusting devices for rolling mills. 3,736,782, Cl. 72-8.000.
Fujita, Takashi: *See—*
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, 3,737,740.
Fujitsu Limited: *See—*
Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, 3,737,817.
Maeda, Kazuo; and Sasaki, Yasuo, 3,737,340.
Fukabori, Masaru: *See—*
Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, 3,737,817.
Fulger, Charles V.: *See—*
Basso, Jude A.; Lemaire, Normand A.; and Fulger, Charles V., 3,737,326.
Fuller Company: *See—*
Mikles, Frank G., 3,737,283.
Fuller, John Rodney Dyson, to United Kingdom of Great Britian and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Gap control apparatus. 3,736,751, Cl. 60-262.000.
Funakubo, Toshiei, to Kabushiki-Kaisha Eishin. Bimetallic high-speed cutting blade. 3,736,828, Cl. 83-661.000.
Furbush, Seymour A.: *See—*
Ameen, Jamiel; and Furbush, Seymour A., 3,737,392.
Furnas Electric Company: *See—*
Mouis, Louis, 3,737,727.
Furuoya, Takashi, to Nippon Electric Company Limited. Cylindrical magnetic domain memory apparatus. 3,737,882, Cl. 340-174.0tf.
Fussgaenger, Kurt; Rachmann, Johannes; and Mettler, Klaus, to Siemens Aktiengesellschaft. Radiation detector. 3,737,828, Cl. 338-18.000.
Fuxe, Kjell Gunnar: *See—*
Corrodi, Hans Rudolf; and Fuxe, Kjell Gunnar, 3,737,541.
Gabor, Andrew, to Diablo Systems, Inc. Apparatus for recovery of recorded bit information on a magnetic recording medium. 3,737,896, Cl. 340-174.10h.
Gaebelle, Rolf; and Gambera, Armand, to GTE Sylvania Incorporated. Automatic dark current control. 3,737,571, Cl. 178-7.200.
Gager, Robert M., to Picker Corporation. X-ray tube having anode target layer of molybdenum rhenium alloy. 3,737,699, Cl. 313-60.000.
Gal, Martin. Front tow hitch for small cars. 3,737,177, Cl. 280-495.000.
Galeone, Vincent A.: *See—*
Amidon, Charles H., Jr.; and Galeone, Vincent A., 3,736,669.
Gallant, Mel M.: *See—*
Linder, Joseph; and Gallant, Mel M., 3,737,405.
Gallo, Giangualberto: *See—*
Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, 3,737,439.
Gambera, Armand: *See—*
Gaebelle, Rolf; and Gambera, Armand, 3,737,571.
Gamblin, Rodger L.; and Southard, Carl D., to International Business Machines Corporation. Holographic read/write storage system. 3,737,878, Cl. 340-173.0lm.
Garard, Richard S.; and Mertens, William J., to Avco Corporation. Corrosion resistant rocket nozzle. 3,737,102, Cl. 239-265.150.
Garcia, Joseph M.: *See—*
Mori, Hideo; and Garcia, Joseph M., 3,737,904.
Gardner, John A., Jr.; Brown, Merle S.; and Jacobs, William H., to Jet Spray Cooler, Inc. Atmospheric closed hot water tank system with separate expansion control. 3,737,076, Cl. 222-146.00h.
Garland, Milton W., to Frick Company. Condenser pressure control apparatus. 3,736,763, Cl. 62-85.000.
Garner, James W.: *See—*
Tsou, Ivan H.; and Garner, James W., 3,737,401.
Garrett Corporation, The: *See—*
Horning, William A., 3,737,247.
Garrett, Michael R., to FMC Corporation. Downhole well casing hanger especially suitable for arctic environment. 3,736,984, Cl. 166-208.000.

Gaskill, Robert E.; and Frey, Sydney W., Jr., to Bourns, Inc. Digital read-out actuator-indicator for multi-turn shaft-actuated instrumentalities. 3,737,634, Cl. 235-103.000.

Gasner, Lawrence L.: *See—*
Stern, Arthur M.; and Gasner, Lawrence L., 3,737,374.

Gates, David S.: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,737,477.

Gaudio, Joseph G.; and Debski, Thomas R., to United States of America, Navy. Broadband waveguide to coaxial line transition. 3,737,812, Cl. 333-32.000.

Gdanski, Ronald C. Coin counter or verifier. 3,736,947, Cl. 133-8.000.

Gebruder Sucker Machingladbach: *See—*
Kabelitz, Hans, 3,737,338.

Geer, Robert W.: *See—*
Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., 3,737,863.

Geiss, Richard; and Quarch, Rolf. Solvent based detergent. 3,737,386, Cl. 252-162.000.

Gelzer, John R. Work-supporting fixture for a conveyor system. 3,737,024, Cl. 198-181.000.

General Electric Company: *See—*
Anderson, Richard C., 3,737,331.
Arendash, Michael G., 3,737,717.
Boldebuck, Edith M., 3,737,478.
Bristow, Robert H., 3,736,649.
Chadwick, Philip, 3,737,763.
Chevaugeon, Rene J.; and Smith, Russell M., 3,737,745.
Du Bell, Thomas L.; and Taylor, Jack R., 3,736,746.
Fox, Daniel W., 3,737,409.
Goronkin, Herbert; and Lunden, John W., 3,737,743.
Haaf, William R., 3,737,479.
Hall, Theodore W., 3,737,712.
Koenig, Paul W., 3,737,738.
Lukes, Robert M., 3,736,767.
Neary, Richard A., 3,736,811.
Nodurft, Clair A., 3,737,719.
O'Dell, George B., 3,736,765.
Pollard, Ernest M., 3,737,759.
Richter, Eike; and Brissey, George E., 3,737,696.
Simmons, Russell T., 3,737,826.
Vallone, Giacinto, 3,737,623.
Waugh, Richard A., 3,736,773.
White, James A., 3,736,916.
Willis, Candler A., Jr., 3,737,720.
Wolfram, Adolf, 3,737,787.

General Electrical Company: *See—*
Mees, Robert D.; and Duncan, George I., 3,737,823.

General Fire Extinguisher Corporation: *See—*
Magdars, John T., 3,736,986.

General Gas Light Company: *See—*
Loveless, Stanley M., 3,737,652.

General Instruments Corporation: *See—*
Jacob, Abraham H., 3,737,818.

General Motors Corporation: *See—*
Fannin, Wayne V.; Gute, Loren R.; and Zimmerle, Wilbur J., 3,736,645.
Hodgson, Robert D., 3,736,943.
Johnson, Lawrence P.; and Kitchin, Oscar G., 3,737,015.
Rahn, Ralph A., 3,737,692.
Vaillancour, Thomas L.; and Sanders, Wayne W., 3,737,708.

General Time Corporation: *See—*
Cielaszyk, Edward F.; Lundin, Robert S.; and Stellwagen, Frank W., 3,737,746.

Gentex Corporation: *See—*
Frieder, Leonard P., Jr., 3,736,610.

George, P. D., Company, The: *See—*
George, Thomas F.; and Lange, Daniel J., 3,737,432.

George, Thomas F.; and Lange, Daniel J., to George, P. D., Company, The. Bridged isocyanurates. 3,737,432, Cl. 260-248.0ns.

Georgi, Heinz W., to Ivac Corporation. Parenteral administration fluid flow control system. 3,736,930, Cl. 128-214.00e.

Georgopoulos, Christos J., to Raytheon Company. Phased array antenna controller. 3,737,899, Cl. 343-5.00r.

Gerber, Robert L., to United States of America, Navy. Chemiluminescent expulsion device. 3,736,874, Cl. 102-2.000.

Gerdes, Charles W., Jr.: *See—*
Kelly, Dale E.; and Gerdes, Charles W., Jr., 3,737,482.

Gerritsen, Jan, to U.S. Philips Corporation. Color purity adjustment utilizing a coil attached to the face plate. 3,737,716, Cl. 315-13.00c.

Gerstenberg, Dieter: *See—*
Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, 3,737,343.

Gessler, Hans, to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung. Rotor arm for silo discharging devices. 3,737,054, Cl. 214-17.00d.

Ghilardi, Guiliana; Kalopissis, Gregoire; de Beaulieu, Henri Philippe; and Abegg, Jean-Louis, to Societe anonyme dite: L'Oreal. Compositions and procedures for effecting a permanent wave or set in the hair. 3,736,944, Cl. 132-7.000.

Ghosh, Ranajit: *See—*
Cox, John Michael; and Ghosh, Ranajit, 3,737,457.

Ghosh, Suhas, to IT & T Corporation. Regenerative PCM line repeater. 3,737,585, Cl. 179-15.0ad.

Gibb, Thomson B.: *See—*
Kreider, Benjamin A.; Jones, William R.; Metalsky, William J.; and Gibb, Thomson B., 3,737,553.

Gibbon, John D.; and Mc Carthy, Stanley. Parting-off box for automatic screw machines. 3,736,819, Cl. 82-2.500.

Giegerich, Raymond W., to Lovejoy, Inc. Pulley assembly. 3,736,804, Cl. 74-230.17c.

Giffin, George S.: *See—*
Babb, Burton A.; Byer, Edward L.; Giffin, George S.; and Rife, Robert E., 3,737,667.

Gilbu, Agnar, to Vera Fabrikker A/S. Method of producing ribbed tubes of reinforced setting plastic material. 3,737,353, Cl. 156-190.000.

Gillock, Jack W., to Park-Ohio Industries, Inc. Inductor for heating an elongated workpiece having different cross-sections. 3,737,613, Cl. 219-10.790.

Gilroy, Robert G.: *See—*
Howell, Glen W.; and Gilroy, Robert G., 3,737,103.

Gilson Bros. Co.: *See—*
Enters, Edward W., 3,736,674.

Giraud, Adrien: *See—*
Azalbert, Jean P.; Giraud, Adrien; and Marquaire, Roger Andre, 3,736,754.

Giroux, Gerald L., to Kraftco Corporation. Versatile non-self-supporting assembly for display purposes. 3,737,048, Cl. 211-182.000.

Gist, Lewis L. Chrome slide lock bead bait holder. 3,736,691, Cl. 43-44.800.

Glacier Metal Company Limited, The: *See—*
Romer, Hugh Frank; and Beazley, Rodney Thomas, 3,736,635.

Glanzer, Stefan, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Apparatus for oiling sheet metal stock. 3,736,902, Cl. 118-50.000.

Glassman, Jacob A. Catamenial napkin. 3,736,931, Cl. 128-240.00r.

Glumac, Nick P. Storage unit and trailer body combination. 3,737,061, Cl. 214-512.000.

Glynn, David P., to Federal-Mogul Corporation. Gasket material and method of making same. 3,737,169, Cl. 277-235.00b.

Gobhai, Cavas M.: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.

Gocho, Sinobu: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Gocho, Sinobu, 3,737,383.

Godfrey, James, to Bell Telephone Laboratories, Incorporated. Semiconductor device fabrication using combination of energy beams for masking and impurity doping. 3,737,346, Cl. 148-1.500.

Goldsworthy Engineering, Inc.: *See—*
Hardesty, Ethridge E., 3,737,261.

Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Aminomethyl-substituted organopolysiloxane as water-repellent and gloss-imparting coating for lacquered metal surface. 3,737,336, Cl. 117-75.000.

Gomi, Yoshiyuk, to Kabushiki Kaisha Chiyoda. Electronic luminous device. 3,737,647, Cl. 240-6.40w.

Gomp, Theodore Q., to Hunter Engineering Co., Inc. Emission-controlled pain line heat source. 3,737,280, Cl. 432-41.000.

Goodrich, B. F., Company, The: *See—*
Born, John W., 3,737,521.
Eden, Jamal S., 3,737,394.

Goodwin, Charles: *See—*
Askam, John F.; and Goodwin, Charles, 3,737,356.

Gordon, Harry W.; and Wasserstein, Paul B., to Schmid, Julius, Inc. Method of treating gonorrhea. 3,737,552, Cl. 424-313.000.

Gordon, Irving: *See—*
Baranauckas, Charles F.; and Gordon, Irving, 3,737,397.

Gordon, William J. J.,: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.

Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., to Gordon, William J. J.,, Fenn, Lawrence E.,, Gobhai, Cavas M. and Prince, George M. Container. 3,737,241, Cl. 401-59.000.

Goronkin, Herbert; and Lunden, John W., to General Electric Company. High power microwave field effect transistor. 3,737,743, Cl. 317-235.00r.

Goss, Willis C.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,231.

Gould Inc.: *See—*
Miller, James H.; and Schaumburg, Edward G., 3,736,642.

Grace, W. R., & Co.: *See—*
Schumann, Robert W., 3,737,328.

Grad, Peter P. Custom framing system. 3,736,684, Cl. 40-152.000.

Grady, Francis J., to Unex Machine & Tool Co., Inc. Cutting apparatus for extruded material. 3,737,269, Cl. 425-196.000.

Graflex, Inc.: *See—*
Hickory, Roy E.; McFadden, Robert N.; and Delfin, Irwin, 3,737,220.

Grant, Arthur G.: *See—*
Toth, John E.; and Grant, Arthur G., 3,737,033.

Grant, Charles H., to Dow Chemical Company, The. Preparing explosive composition having precipitated salt matrix. 3,737,350, Cl. 149-17.000.

Gray, Richard W., to USM Corporation. Automatic hemming machines. 3,736,892, Cl. 112-141.000.

Green, Elberson D., to United States of America, Navy, mesne. Radar map comparison guidance system. 3,737,120, Cl. 244-3.170.
Green, William S.; and Newman, John W., to Ashland Oil, Inc. Preparation of alkyl phenanthrenes. 3,737,472, Cl. 260-668.00f.
Greene, Richard M.; Mc Laughlin, Donald L.; and Paivinen, John O., to Mos Technology, Inc. Self-refreshing memory. 3,737,879, Cl. 340-173.00r.
Gregan, Daniel P., to Foseco International Limited. Apparatus for locking hot tops. 3,737,138, Cl. 249-197.000.
Gregory, Charles A., Jr.: *See—*
Marshall, Arthur N.; Rinehart, James W.; and Gregory, Charles A., Jr., 3,737,851.
Gregory, Ted W., to Arens Controls, Inc. Control unit. 3,736,800, Cl. 74-491.000.
Gregson, Peter Michael: *See—*
Mattingly, William Russell, Jr.; and Gregson, Peter Michael, 3,737,838.
Grenon, Lawrence A.; and Coleman, Michael G., to Motorola Inc. Scannable light emitting diode array and method. 3,737,704, Cl. 313-108.00d.
Grimm, Richard; Herzog, Willi; and Lademann, Rudolf, to Farbwerke Hoechst Aktiengesellschaft. Process for the removal of dimethyl sulfate from gases by adsorption on active charcoal. 3,736,726, Cl. 55-73.000.
Grimmell, William Charles: *See—*
Adams, Jim Mills; and Grimmell, William Charles, 3,737,239.
Grossmann, Walter; and Thaddey, Kurt, to Ciba-Geigy AG. Photographic camera. 3,736,856, Cl. 95-1.100.
Grotnes Machines Works, Inc.: *See—*
Fencl, Vernon R.; and Roze, Albert, 3,736,787.
Grow Chemical Corporation: *See—*
Tsou, Ivan H.; and Garner, James W., 3,737,401.
Gruller, David L.: *See—*
Hayes, Thomas J., Jr.; and Gruller, David L., 3,737,180.
Grundig Electromechanische Versuchsanstalt Max Grundig: *See—*
Mangold, Hans; and Adelmann, Hans-Jurgen, 3,737,775.
Gruner, Ronald H., to Data General Corporation. Data storage and retrieval system. 3,737,866, Cl. 340-172.500.
Grupp, Alfred F.: *See—*
Barta, Franz; and Grupp, Alfred F., 3,737,088.
Barta, Franz; and Grupp, Alfred F., 3,737,091.
Gruppo Lepetit S.p.A.: *See—*
Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, 3,737,439.
GTE Automatic Electric Laboratories Incorporated: *See—*
Puccini, Sergio E., 3,737,873.
GTE Sylvania Incorporated: *See—*
Decker, John J.; and Kerstetter, Donald R., 3,737,342.
Eckenbrecht, Robert Roy, 3,737,570.
Gaebelle, Rolf; and Gambera, Armand, 3,737,571.
Susi, A. Frederick, 3,737,588.
Waymouth, John F.; Keeffe, William M.; and Gungle, W. Calvin, 3,737,710.
Gukelberger, Thomas F., Jr.: *See—*
Blakeslee, A. Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., 3,737,739.
Gulf & Western Industries, Inc.: *See—*
Hill, Frank W.; and Fieser, Garland E., 3,737,672.
Gulf & Western Systems Company: *See—*
Amidon, Charles H., Jr.; and Galeone, Vincent A., 3,736,669.
Gulf Research & Development Company: *See—*
Hedrich, Loren W., 3,737,299.
Gulton Industries, Inc.: *See—*
Suvela, Bernard R., 3,737,599.
Gungle, W. Calvin: *See—*
Waymouth, John F.; Keeffe, William M.; and Gungle, W. Calvin, 3,737,710.
Guntermann, Hans, to Elektro-Thermit G.m.b.H. Device for destroying machinery. 3,736,878, Cl. 102-90.000.
Gustafson, Thomas G.: *See—*
Wolter, Charles R.; and Gustafson, Thomas G., 3,736,949.
Gute, Loren R.: *See—*
Fannin, Wayne V.; Gute, Loren R.; and Zimmerle, Wilbur J., 3,736,645.
Gutermann, Iraugott; and Kiehl, Edmund, to Messer. Griesheim G.m.b.H. Injector cutting torch or a combined injector welding and cutting torch. 3,736,957, Cl. 137-604.000.
Guth, Carl R. Full mixing shroud for heating torches. 3,737,281, Cl. 431-352.000.
Gutmacher, Ralph G.: *See—*
McCoy, Donald D.; Shue, Bruce H.; and Gutmacher, Ralph G., 3,737,789.
Gutman, Arnold D., to Stauffer Chemical Company. Certain oximino phosphorus containing compounds used as insecticides and acaricides. 3,737,528, Cl. 424-203.000.
Gutman, Arnold D., to Stauffer Chemical Company. Certain oximinophosphonodithioates as insecticides and acaricides. 3,737,530, Cl. 424-210.000.
Ha, In W.: *See—*
Sordello, Frank J.; and Ha, In W., 3,737,883.
Haaf, William R., to General Electric Company. Composition of polyorganosiloxane and polyphenylene oxide. 3,737,479, Cl. 260-824.00r.
Hacker, Leon, to Armco Steel Corporation. Filling an annular space between radially space coaxial tubes with foamed cement. 3,737,493, Cl. 264-42.000.
Hadek, Vaclav: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,762.
Hadfield, Robert W.: *See—*
Flachbarth, Charles T.; Hadfield, Robert W.; and Harding, William H., 3,736,713.
Haertling, Gene H., Jr.: *See—*
Cutchen, John T.; Haertling, Gene H., Jr.; and Harris, James O., Jr., 3,737,211.
Hafner, Wolfgang; and Hufnagel, Walter, to Lever Brothers Company. Method for the manufacture of PVC bottles. 3,737,497, Cl. 264-94.000.
Haines, Richard F.; Fitzgerald, James W.; and Rositano, Salvadore A., to United States of America, National Aeronautics and Space Administration. Visual examination apparatus. 3,737,217, Cl. 351-23.000.
Hait, James M., to FMC Corporation. Fruit processing apparatus. 3,736,865, Cl. 100-98.00r.
Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process of joining by means of polyhalogen compounds. 3,737,421, Cl. 260-94.20m.
Halbrook, Noah J.; and Lawrence, Ray V., to United States of America, Agriculture. 2-Aminoethanol salt of dehydroabietic acid. 3,737,453, Cl. 260-501.170.
Hall, Garth O.; and Zach, Donald J., to Universal Oil Products Company. Seat belt anchor mechanism for adjustable seat. 3,737,197, Cl. 297-385.000.
Hall, Theodore W., to General Electric Company. Sparkgap assembly having a semi-conductive coating adjacent the electrodes thereof. 3,737,712, Cl. 313-325.000.
Hallgreen, Knud Julius, to Danfoss A/S. Temperature-regulating apparatus. 3,737,622, Cl. 219-364.000.
Hamaguchi, Ichiro: *See—*
Ono, Shiego; Hamaguchi, Ichiro; and Toyoda, Kenji, 3,736,851.
Hamilton, Billy Harold: *See—*
Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, 3,737,755.
Hammon Corporation: *See—*
Mathias, Robert G., 3,737,555.
Hammond, Michael R.: *See—*
Pfaffmann, George D.; and Hammond, Michael R., 3,737,612.
Hammond, Roland P.; and Michel, John W. Irrigation system. 3,736,755, Cl. 61-12.000.
Hanahara, Toru: *See—*
Suemasa, Hideo; Honda, Kazuyoshi; Yoda, Kenichi; and Hanahara, Toru, 3,737,732.
Hansen, Earl A.: *See—*
Arthur, Ronald H.; Eickhorst, Melvin F.; and Hansen, Earl A., 3,737,601.
Hansen, Harold Valentine, to Deere & Company. Detasseling apparatus. 3,736,731, Cl. 56-63.000.
Hansen, Harry, to Lysta A/S. Stringer having bonded coupling element. 3,736,628, Cl. 24-205.100.
Hanson, Larry G.: *See—*
Farmer, Kenneth R.; and Hanson, Larry G., 3,736,682.
Hanson, Roy R. Reloading device. 3,736,835, Cl. 86-19.000.
Hanzawa, Teruo: *See—*
Inoje, Isaburo; Hanzawa, Teruo; and Eneo, Takaya, 3,737,318.
Harbour, Philip F.; and Wilcox, Charles A., to Westinghouse Electric Corporation. Machine compartment arrangement for a refrigerating device. 3,736,768, Cl. 62-455.000.
Hardesty, Ethridge E., to Goldsworthy Engineering, Inc. Resin impregnating system. 3,737,261, Cl. 425-113.000.
Harding, William H.: *See—*
Flachbarth, Charles T.; Hadfield, Robert W.; and Harding, William H., 3,736,713.
Harding, William R.: *See—*
Hill, Vincent G.; and Harding, William R., 3,737,276.
Haring, John H., to Mc Cord Corporation. Ash tray assembly. 3,737,208, Cl. 312-246.000.
Harmsen, Willem: *See—*
Van Gerwen, Petrus Josephus; and Harmsen, Willem, 3,737,778.
Haroules, George G.; and Brown, Wilfred E., to United States of America, National Aeronautics and Space Administration. Method and apparatus for measuring solar activity and atmospheric radiation effects. 3,737,905, Cl. 343-100.0me.
Harrington, F. Edward: *See—*
Williams, Steele D., 3,737,279.
Harris, James O., Jr.: *See—*
Cutchen, John T.; Haertling, Gene H., Jr.; and Harris, James O., Jr., 3,737,211.
Harris, John L., to Deltrol Corporation. Dual range manual preset timer. 3,736,799, Cl. 74-3.520.
Harris, John L., to Deltrol Corporation. Condition control device and system. 3,737,820, Cl. 335-65.000.
Harris, Joseph I., to Super Key Associates, mesne. Automatic checkout and inventory control. 3,737,631, Cl. 235-61.60r.
Harrison, Floyd L.: *See—*
Radnofsky, Matthew I.; Barnett, James H., Jr.; Harrison, Floyd L.; and Marak, Ralph J., 3,736,607.
Hart, Harry L.: *See—*

Johnson, Leonard L.; Mahoney, Tennis; and Hart, Harry L., 3,736,870.

Hartel, Hagen: *See*—
Salge, Jurgen; and Hartel, Hagen, 3,737,724.

Harter, James E.; and Rosenburgh, Norman J., to Eastman Kodak Company. Print border control apparatus. 3,737,227, Cl. 355-74.000.

Hartmann, Helmut; and Stein, Werner, to Henkel & Cie G.m.b.H. Continuous process for the separation of mixtures of fatty acids of different melting points. 3,737,444, Cl. 260-419.000.

Hartmann, Horst, to Zysset, K., & Co. Hand-operated slicing cutter mechanism. 3,736,662, Cl. 30-283.000.

Hartzell, Carl D.; and Schwarzer, Thomas P., to Raymond International Inc. Cast-in-situ concrete piles. 3,736,757, Cl. 61-53.640.

Harvey, Donald M., to Eastman Kodak Company. Film cartridge and assemblage. 3,737,315, Cl. 96-76.00c.

Harvey, Douglas G., to Sanders Nuclear Corporation. Body heating system. 3,737,620, Cl. 219-211.000.

Hasewend, Florian: *See*—
Vida, Josef; and Hasewend, Florian, 3,736,994.

Hashimoto, Koichi; and Kishida, Hideko, to Ulvac Corporation. Membrane for use in dialysis and ultrafiltration and the production of such member. 3,737,045, Cl. 210-490.000.

Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuji; and Fujii, Setsuro, to Taiho Pharmaceutical Company Limited. ω-Guanidino acid amide derivatives and manufacturing the same. 3,737,443, Cl. 260-404.500.

Hasley, Andrew Daniel; and Hock, Richard Howard, to Bell Telephone Laboratories, Incorporated. Converter circuit with balanced parallel switching paths. 3,737,756, Cl. 321-2.000.

Hastings, Charles E., to Teledyne, Inc. Constant line of position navigation system. 3,737,635, Cl. 235-150.260.

Hatebur, F. B., AG: *See*—
Hof, Bruno, 3,736,827.

Hathcock, James S., Jr., to Conco Inc. Plural number control system for an automatic warehouse. 3,737,056, Cl. 214-16.40a.

Hathcote, Lester R.: *See*—
Maroney, Harold W.; Hathcote, Lester R.; and Sparkman, Thomas W., 3,737,845.

Hattori, Takeo, to Mitsubishi Petrochemical Co., Ltd. Production of synthetic papers. 3,737,354, Cl. 156-229.000.

Hauck, Theodor Franz: *See*—
Junike, Wilhelm August Karl; and Hauck, Theodor Franz, 3,737,753.

Hauni-Werke Korber & Co., KG: *See*—
Elsner, Uwe; and Wochnowski, Waldemar, 3,736,942.

Hawes, Roland C., to Cary Instruments. Polarization interferometer with beam polarizing compensator. 3,737,235, Cl. 356-114.000.

Hawk, Beverly G. Bearings. 3,737,203, Cl. 308-200.000.

Hawley, William L., to Powerlite Devices Limited. Modular luminaire. 3,737,654, Cl. 240-52.00r.

Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing an alternating copolymer of an alpha-olefin and butadiene. 3,737,416, Cl. 260-82.100.

Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing an alternating copolymer of an alpha olefin and a conjugated diene. 3,737,417, Cl. 260-84.100.

Hayden, Jack; and Stewart, William. Synergistic mixture of drugs. 3,737,537, Cl. 424-247.000.

Hayden, Rodney, to TRW Inc. Vehicle transistorized warning circuit. 3,737,848, Cl. 340-52.00d.

Haydu, Andrew G., to Westinghouse Air Brake Company. Slack adjuster for railway brake apparatus. 3,737,012, Cl. 188-202.000.

Hayes, Thomas J., Jr.; and Gruller, David L., to Kurier Corporation. Pipe clamp. 3,737,180, Cl. 285-197.000.

Haynes, Robert E. Mole trap. 3,736,689, Cl. 43-77.000.

Hazelton, Donald R.: *See*—
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.

Heady, Paul A., Jr.: *See*—
Kreischmer, Willi K.; and Heady, Paul A., Jr., 3,736,749.

Hearn, Eric W.; Schwuttre, Guenter H.; and Tekart, Erich H., said Hearn and said Schwuttke assors. to International Business Machines Corporation. Method for reducing crystallographic defects in semiconductor structures. 3,737,282, Cl. 432-6.000.

Hechenbleikner, Ingenuin, to Weston Chemical Co., Inc. Tripentaerythritol tetraphosphite. 3,737,485, Cl. 260-27.00r.

Heckler & Koch GmbH: *See*—
Moller, Tilo; and Ketterer, Dieter, 3,736,686.

Hedrich, Loren W., to Gulf Research & Development Company. Method of combating nutsedge. 3,737,299, Cl. 71-94.000.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Digital responsive altimeter. 3,737,885, Cl. 340-198.000.

Heggs, Thomas Geoffrey: *See*—
Verne, Stefan; and Heggs, Thomas Geoffrey, 3,737,557.

Heindl, William, Jr. Masks for slide transparencies. 3,737,364, Cl. 161-36.000.

Heinemann Electric (South Africa) Limited: *See*—
Tarchalski, Edward, 3,737,726.

Heller, Kenneth G.; Ray, Harold T.; and Martens, Douglas A., to Walworth Company. Fabricated valve ball. 3,737,145, Cl. 251-309.000.

Helmers, Helmut, to Olympia Werke AG. One way clutch and brake device. 3,737,018, Cl. 197-64.000.

Henkel & Cie G.m.b.H.: *See*—
Hartmann, Helmut; and Stein, Werner, 3,737,444.
Werdehausen, Achim, 3,737,385.

Hennessy, Alexander J. Surgical drainage appliance. 3,736,934, Cl. 128-283.000.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Insect control agents. 3,737,450, Cl. 260-468.00h.

Henry, Georges: *See*—
Henry, Jean-Claude; Castelli, Cesar; and Henry, Georges, 3,737,836.

Henry, Jean-Claude; Castelli, Cesar; and Henry, Georges, to Merlin Gerins, Societe Anonyme. Self-coupling device for drawout mounted electric apparatus. 3,737,836, Cl. 339-64.00r.

Herbes, William Frank: *See*—
O'Brien, Samuel James; Stockel, Richard Frederick; and Herbes, William Frank, 3,737,284.

Hernandez, Ralph, Jr. Aircraft gyrohorizon indicator with signal lamp positional attitude indicating means. 3,737,846, Cl. 340-27.0at.

Herr, Charles H., to Caterpillar Tractor Company. Transmission input clutch. 3,736,814, Cl. 74-740.000.

Herrbach, Paul; and Breton, Alain, to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques. Process for the production of crimped acrylonitrile base yarns with an isopropanol containing bath. 3,737,504, Cl. 264-168.000.

Herrell, Robert C., to Baker-Roos, Inc. Adjustable scaffold. 3,737,007, Cl. 182-210.000.

Herrick, Frank T., to Massey-Ferguson, Inc. Bale packer fork adjustment. 3,736,866, Cl. 100-189.000.

Hertz, Carl Hellmuth. Liquid jet recorder. 3,737,914, Cl. 346-75.000.

Herzog, Willi: *See*—
Grimm, Richard; Herzog, Willi; and Lademann, Rudolf, 3,736,726.

Hesebeck, Manfred; and Soring, Holger. Tube writing pen. 3,737,242, Cl. 401-157.000.

Hess, George A.; Kffalas, John H.; and MacInnes, Richard D., to Honeywell Information Systems Inc. Capacitive read only memory. 3,737,874, Cl. 340-173.0sp.

Hesston Corporation: *See*—
Fell, Ferol S.; Long, William D.; and McMillen, Kenneth R., 3,736,733.

Hester, Jackson B., Jr., to Upjohn Company, The. Certain 2-acyl-2,4-dihydro-6-phenyl[1,2,3,5] thiatriazolo[5,4-a][1,4]benzodiazepine-1-oxides and process. 3,737,434, Cl. 260-302.00f.

Hewlett-Packard Company: *See*—
Katzman, James A., 3,737,871.

Heywang, Walter; Winstel, Guenter; and Zschauer, Karl-Heinz, to Siemens Aktiengesellschaft. Semiconductor diode for an injection laser. 3,737,737, Cl. 317-234.00r.

HiCarb Corporation: *See*—
Sonnie, John R., 3,736,634.

Hickey, James R., to Mosher, Robert H.; d/b/a R. M. Associates. Synthetic terrain covering. 3,736,847, Cl. 272-56.500.

Hickman, Albert F. Full axle compression rubber spring suspension for vehicles. 3,737,174, Cl. 280-124.00b.

Hickory, Roy E.; McFadden, Robert N.; and Delfin, Irwin; deceased (by Eelin, Juliett P.; administratrix), to Graflex, Inc. Slot-load projector. 3,737,220, Cl. 352-159.000.

Hicks, Harold N., Jr., to Ashland Oil, Inc. Apparatus for cracking and recovery of hydrocarbons. 3,737,285, Cl. 23-277.00r.

Hida Denki Kogyo Kabishiki Kaisha: *See*—
Ando, Shoichi; and Yoshiko, Shinji, 3,737,660.

Higgins , James H.: *See*—
Schultz, Seiford F.; and Higgins , James H., 3,737,348.

Higgs, Roland W., to Honeywell Inc. Composite acoustic decoupler. 3,737,004, Cl. 181-.50a.

Hill, Frank W.; and Fieser, Garland E., to Gulf & Western Industries, Inc. Low-level logic protection interface. 3,737,672, Cl. 307-202.000.

Hill, Vincent G.; and Harding, William R., to Carborundum Company, The. Molding of powdered or granular material. 3,737,276, Cl. 425-388.000.

Hirs, Gene, to Hydromation Filter Company. Method of filtering. 3,737,039, Cl. 210-80.000.

Hirsch, Walter, to Massey-Ferguson Industries Limited. Hinged mounting for tilt cab. 3,737,192, Cl. 296-28.00c.

Hitachi, Ltd.: *See*—
Fujino, Nobuhiro; and Kajiwara, Hitachi, 3,736,782.
Kiwaki, Hisakatsu; Sato, Hiroshi; and Kuwabara, Takeo, 3,737,760.

Ho, Y.-C.: *See*—
Adams, David K.; and Ho, Y.-C., 3,737,801.

Hochman, Jack M., to Esso Research and Engineering Company. Antifouling deflector in olefin polymerization reactors. 3,737,288, Cl. 23-285.000.

Hock, Richard Howard: *See*—
Hasley, Andrew Daniel; and Hock, Richard Howard, 3,737,756.

Hodgson, Robert D., to General Motors Corporation. Vehicle body ash tray cigarette extinguisher. 3,736,943, Cl. 131-235.00r.

Hodler, Karl, to Kuhnke, H. Elektrotechnik GmbH. Pneumatically operated timer. 3,737,143, Cl. 251-28.000.

Hodson, David George: *See*—

Farrar, Trevor Alfred; Hodson, David George; and Peat, Derek, 3,736,895.

Hoeberechts, Arthur Marie Eugene: *See—*
Kooi, Else; and Hoeberechts, Arthur Marie Eugene, 3,737,702.

Hoeberechts, Arthur Marie Eugene; and Kooi, Else, to U.S. Philips Corporation. Camera tube having a semiconductor target with PN organic regions covered by a continuous perforated conductive layer. 3,737,701, Cl. 313-66.000.

Hoerner Waldorf Corporation: *See—*
Derauf, Richard E., 3,737,095.

Hoesch Aktiengesellschaft: *See—*
Butterweck, Artur; and Bromsen, Wilhelm, 3,736,838.

Hof, Bruno, to Hatebur, F. B., AG. Device for manufacturing a pair of annular members from a preformed blank. 3,736,827, Cl. 83-126.000.

Hoff, Dale R.: *See—*
Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S., 3,737,547.

Hoffman, Norman Edwin, to AMP Incorporated. Lug assembly. 3,737,840, Cl. 339-273.00f.

Hoffmann-La Roche, Inc.: *See—*
Adams, Jim Mills; and Grimmell, William Charles, 3,737,239.
Messersmith, Robert Earl; and Roncalli, Raffaele Amici, 3,737,546.

Hogstrom, Edwin F.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin P., 3,737,107.

Hohenberg, Rudolph, to Avco Corporation. Fan engine thrust monitor. 3,736,796, Cl. 73-178.00t.

Hohne, Arthur: *See—*
Schafer, Karl; and Hohne, Arthur, 3,737,265.

Hollymatic Corporation: *See—*
O'Malley, James J.; and Strickland, Murray C., 3,736,623.

Holme, John C.: *See—*
Lehrer, Stanley; Robertson, Raymond A.; and Holme, John C., 3,737,856.

Holmes, Peter, to Societe Genevoise d'Instruments de Physique. High precision reading device of the graduation of a precision ruler. 3,737,669, Cl. 250-231.00r.

Homer, Horace H.: *See—*
Biggs, Orrick Howard; Homer, Horace H.; Lougheridge, Frederick A.; and Westlund, Arnold, 3,737,653.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Okura, Takao; Miyaki, Kiyoshi; and Arai, Sakuji, 3,736,912.

Honda, Kazuyoshi: *See—*
Suemasa, Hideo; Honda, Kazuyoshi; Yoda, Kenichi; and Hanahara, Toru, 3,737,732.

Honeywell Inc.: *See—*
Higgs, Roland W., 3,737,004.
Ogawa, Francis T., 3,737,721.
O'Neill, William F.; Neema, Farid J.; and Hopey, Edward P., 3,737,861.

Honeywell Information Systems Inc.: *See—*
Hess, George A.; Kffalas, John H.; and MacInnes, Richard D., 3,737,874.
Jerominek, Raymond, 3,737,833.
Sporer, Michael, 3,737,860.
Srivastava, Keshava, 3,737,808.

Honicke, Helmut, to International Standard Electric Corporation. Rectangular cavity resonator and microwave filters built form such resonators. 3,737,816, Cl. 333-73.00w.

Hoover, Lawrence E., 1/3 to Tramontozzi, Anthony and 1/3 to Papas, Constantine S. Piezoelectric distributor. 3,737,691, Cl. 310-8.700.

Hopey, Edward P.: *See—*
O'Neill, William F.; Neema, Farid J.; and Hopey, Edward P., 3,737,861.

Hori, Yoshiro: *See—*
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, 3,737,844.

Horiee, Koichi; Yosioa, Tsunencbo; and Machida, Tokuji, to Tanabe Kakoki Co., Ltd. Electric smelting furnace of closed-type having dust removing means fixed to exhaust gas vent pipes thereof. 3,737,554, Cl. 13-33.000.

Horigome, Sunobu, to Sony Corporation. Stereophonic broadcasting receiving system with acoustic matrixing. 3,737,581, Cl. 179-15.0bt.

Horino, Shigeo, to Tokyo Shibaura Electric Co., Ltd. Apparatus for aligning edges of stacked sheets in the vertical direction. 3,737,051, Cl. 214-6.00s.

Horn, Harvey S., to United Merchants and Manufacturers, Inc. Applicator-dispenser for applying self-adhesive materials. 3,737,360, Cl. 156-577.000.

Horn, Michael F.: *See—*
Arnold, Orlan M.; and Horn, Michael F., 3,737,105.
Arnold, Orlan M.; and Horn, Michael F., 3,737,106.

Horning, William A., to Garrett Corporation, The. Composite nozzle. 3,737,247, Cl. 415-195.000.

Hornman, Johannes Petrus; Van Esdonk, Johannes; and Visser, Jan, to U.S. Philips Corporation. Gas discharge tube comprising mercury vapour and provided with a getter. 3,737,709, Cl. 313-174.000.

Horowitz, Alexandre; Beusink, Bernard Joseph; and Cuypers, Martinus Hubertus, to U.S. Philips Corporation. Variable speed transmission mechanism. 3,736,803, Cl. 74-192.000.

Hot Items Incorporated: *See—*
Lebensfeld, Steven Allen, 3,736,694.

Hottinger Baldwin Messtechnik GmbH: *See—*
Darmstadt, Jurgen Paetow, 3,737,827.

Houghton, Le Roy H.: *See—*
Rempes, Paul E., Jr.; and Houghton, Le Roy H., 3,737,718.

Howard, Frank S., to United States of America, National Aeronautics and Space Administration. Floating baffle to improve efficiency of liquid transfer from tanks. 3,736,956, Cl. 137-582.000.

Howard, William L.; and Burger, Joanne D., to Dow Chemical Company, The. Resolution of optically active propylene glycol and certain ketones. 3,737,463, Cl. 260-587.000.

Howe, James D., to Bausch & Lomb Incorporated. Multilayer filter based on substitution of herpin equivalent layers in a antireflection coating formula. 3,737,210, Cl. 350-166.000.

Howell, Glen W.; and Gilroy, Robert G., to TRW Inc. Digital liquid vector control system. 3,737,103, Cl. 239-265.230.

Hsieh, Edward P.: *See—*
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,737,870.

Hsieh, Henry L., to Phillips Petroleum Company. Alkene oxide polymerization. 3,737,419, Cl. 260-88.300.

Hubbell, Harvey, Incorporated: *See—*
Lee, Sung C.; and Burns, Edward P., 3,737,765.

Huber, Erich: *See—*
Dietrich, Bernhard; and Huber, Erich, 3,737,604.

Huebner, Werner P. E.; and Long, Robert G., to D.D.I. Communicat Inc. Multiplexer neuter detector. 3,737,677, Cl. 307-234.000.

Huff, Otto. Bottle opener. 3,736,817, Cl. 81-3.10c.

Hufnagel, Walter: *See—*
Hafner, Wolfgang; and Hufnagel, Walter, 3,737,497.

Hughes Aircraft Company: *See—*
Basiulis, Algerd; and Reed, Elmer E., Jr., 3,736,936.
Basiulis, Algerd, 3,736,937.
Erwin, Floyd Dennis, 3,737,865.
Parham, O. D., 3,737,792.
Parkham, O. D., 3,737,807.
Pond, Charles W., 3,737,814.

Hughes, David Owen: *See—*
Stander, Cornelius Marthinus; and Hughes, David Owen, 3,737,491.
Stander, Cornelius Marthinus; and Hughes, David Owen, 3,737,492.

Hunsberger, Arnold: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,737,057.

Hunsucker, Jerry Hoyt, to Commercial Solvents Corporation. Baking enamel vehicle comprising the reaction product of an oxazoline with phenol. 3,737,408, Cl. 260-47.0cp.

Hunter, Douglas, International N.V.: *See—*
Edixhoven, Gerardus Hendrikus, 3,736,631.

Hunter Engineering Co., Inc.: *See—*
Gomp, Theodore Q., 3,737,280.

Hydril Company: *See—*
Watts, John D., 3,737,139.

Hydromation Filter Company: *See—*
Hirs, Gene, 3,737,039.

Hydrotech Services, Inc.: *See—*
White, William E., Jr., 3,737,179.

Hyer Hardware Mfg. Company: *See—*
Swartz, Dorian J., 3,737,184.

Hygrade Food Products Corporation: *See—*
Strelchuk, William N., 3,737,329.

I-T-E Imperial Corporation: *See—*
Rietz, Earl B.; McCloud, James R.; Koenn, Hubert J.; and Wall, David A., 3,737,831.

Icard, Joseph W., to Broyhill Furniture Industries. Lumber unstacking apparatus. 3,737,034, Cl. 209-84.000.

Ichihara, Tatsuro: *See—*
Kato, Toshio; and Ichihara, Tatsuro, 3,737,847.

ICI America, Inc.: *See—*
Feltzin, Joseph; and Tehrani, Nadji, 3,737,391.

Ideal Toy Corporation: *See—*
Nielsen, Edwin, 3,736,699.

IIT Research Institute: *See—*
Camras, Marvin, 3,737,568.

Ikegaki, Makoto: *See—*
Tsuneta, Asahide; and Ikegaki, Makoto, 3,736,848.

Illig, Dietmar: *See—*
Lukas, Josef; and Illig, Dietmar, 3,737,643.

Illinois Tool Works, Inc.: *See—*
Owen, Ronald C., 3,737,069.

Imperial Chemical Industries Limited: *See—*
Ball, Malcolm James, 3,737,027.
Cox, John Michael; and Ghosh, Ranajit, 3,737,457.
Dodman, David; Pearson, Kenneth William; and Woolley, John Mathers, 3,737,445.
Wilding, Frank, 3,737,503.

Industrie Pirelli S.p.A.: *See—*
Mezzanotte, Mario; Carretta, Ferdinando; and Turchetti, Gianni, 3,736,973.

Industriewerk Schaeffler, OHG: *See—*
Staneff, Stefan, 3,736,626.

Information Storage Systems, Inc.: *See—*
Sordello, Frank J.; and Ha, In W., 3,737,883.

Ingersoll-Rand Company: *See—*
Dresher, Seymour, 3,737,243.

Inoje, Isaburo; Hanzawa, Teruo; and Eneo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color photographic material. 3,737,318, Cl. 96-100.000.
Inouye, Henry: *See—*
Liu, Chain T.; and Inouye, Henry, 3,737,309.
Institut de Recherche Woog: *See—*
Mutschelknauss, Ralf E.; Schumann, Johannes P.; and Bergman, Manfred, 3,736,918.
Institut Dr. Ing. Reinhard Straumann AB: *See—*
Sutter, Franz, 3,736,666.
Instrument Systems Corporation: *See—*
Reich, Zygmund, 3,737,862.
Intermag GmbH: *See—*
Berdelle-Hilge, Philipp, 3,737,323.
International Business Machine Corporation: *See—*
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,737,870.
International Business Machines Corporation: *See—*
Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., 3,737,097.
Belet, Joseph J.; and Quanstrom, Jack L., 3,737,893.
Blakeslee, A. Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., 3,737,739.
Cordi, Vincent A.; and Nickel, Ted Y., 3,737,881.
Cutaia, Alfred, 3,737,855.
Esteban, Daniel Jacques, 3,737,636.
Esteban, Daniel Jacques, 3,737,638.
Frankeny, Richard F.; and Tuttle, Joey K., 3,737,637.
Gamblin, Rodger L.; and Southard, Carl D., 3,737,878.
Hearn, Eric W.; Schwuttre, Guenter H.; and Tekart, Erich H. (said Hearn and said Schwuttke assors. to), 3,737,282.
Jones, Alan L.; Judson, George T.; Kellogg, Robert M.; and Kruger, Victor R., 3,737,096.
Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter, 3,736,651.
Lima, Philip J., 3,737,751.
Robinson, Thomas E., 3,737,852.
International Harvester Company: *See—*
Lark, Wayne W.; and Jennings, Marvin D., 3,737,830.
Randol, Kent B.; and Redford, Robert L., 3,736,989.
International Nickel Company, Inc.: *See—*
Cairns, Robert Lacock; and Benjamin, John Stanwood, 3,737,300.
International Standard Electric Corporation: *See—*
Cuthbert, Laurence Geoffrey; and Anderson, Raymond John, 3,737,897.
Honicke, Helmut, 3,737,816.
Lawson, Anthony Newton, 3,737,607.
Trelut, Jean Marie; and Michel, Jean Bernard, 3,737,869.
Walther, Dieter H., 3,737,761.
International Synthetic Rubber Company Limited, The: *See—*
Porter, David; Campbell, William Shore; and Duck, Edward William, 3,737,488.
International Telephone and Telegraph Corporation: *See—*
Cooper, James Joseph, Jr., 3,737,559.
Kalish, Joseph, 3,737,713.
Mattingly, William Russell, Jr.; and Gregson, Peter Michael, 3,737,838.
Nemit, Jeffrey T., 3,737,908.
Wallace, Charles H., 3,736,622.
Internationale Erfinder-und Patentanstalt: *See—*
Veloso, Alberto E., 3,737,515.
Intronics Incorporated: *See—*
Knitter, James B., 3,737,641.
Irby, James E. Hand covering device. 3,736,926, Cl. 128-133.000.
Ishikawa, Mineo: *See—*
Kuno, Hiroshi; Suzuki, Kenji; and Ishikawa, Mineo, 3,737,684.
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IT & T Corporation: *See—*
Ghosh, Suhas, 3,737,585.
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Muto, Kiyoshi; Itoh, Takao; and Ohmori, Nobutsugu, 3,736,712.
ITT Industries, Inc.: *See—*
Reinartz, Hans-Dieter, 3,737,011.
Ivac Corporation: *See—*
Georgi, Heinz W., 3,736,930.
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Toyama, Akira; Matsumoto, Itsuro; and Izumichi, Tetsuo, 3,736,762.
Jackson, James W., to Bird & Son, Inc. Method for heat and vacuum-pressure machine molding. 3,737,498, Cl. 264-92.000.
Jackson Vibrators, Inc.: *See—*
Anderson, James E., 3,736,879.
Jacob, Abraham H., to General Instruments Corporation. Matrix tuning system. 3,737,818, Cl. 334-11.000.
Jacobs, William H.: *See—*
Gardner, John A., Jr.; Brown, Merle S.; and Jacobs, William H., 3,737,076.
Jacuzzi Research, Inc.: *See—*
Jacuzzi, Roy A.; and Kosta, Peter L., 3,736,924.
Jacuzzi, Roy A.; and Kosta, Peter L., to Jacuzzi Research, Inc. Hydromassage tub assembly. 3,736,924, Cl. 128-66.000.
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Usami, Sadao, 3,736,841.
Jager, Gerhard; and Wegler, Richard, to Bayer Aktiengesellschaft. Preparation of 4,5,6,7-tetrahydrocyclopenta-1, 3-dioxinones-(4). 3,737,429, Cl. 260-240.00d.
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James, Frank R., to Western Hat Corral Co. Hat support. 3,737,081, Cl. 223-84.000.
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Jarowenko, Wadym; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Process for making paper and paper made therefrom using liquid cationic starch derivatives. 3,737,370, Cl. 162-175.000.
Jeger, Hans; and Rohre, Rudolf, to Schweizerische Aluminium AG. Device for the opening of foil sealed containers. 3,736,660, Cl. 30-6.400.
Jenner, Edward L., to Du Pont de Nemours, E. I., and Company. Calcium-deficient hydroxylapatite for use in column chromatography. 3,737,516, Cl. 423-308.000.
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Lark, Wayne W.; and Jennings, Marvin D., 3,737,830.
Jennings, Teari James; Vogellaar, Bernard Francis; and Lamp, Robert, to Deere & Company. Auxiliary drive system for combines. 3,736,732, Cl. 56-10.900.
Jerominek, Raymond, to Honeywell Information Systems, Inc. Ribbon cable connector system having feed thru connector. 3,737,833, Cl. 339-17.00f.
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Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., 3,737,863.
Jet Spray Cooler, Inc.: *See—*
Gardner, John A., Jr.; Brown, Merle S.; and Jacobs, William H., 3,737,076.
Jeter, Monty L. Filing system. 3,737,046, Cl. 211-10.000.
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Johansson, Johan Gunnar Inge, to Defibrator Aktiebolag. Double-acting axial thrust and radial bearings for grinding apparatus. 3,737,109, Cl. 241-37.000.
Johns, Herman S., to Wellman Industries Inc. Apparatus for coiling textile sliver. 3,736,625, Cl. 19-159.00r.
Johns Hopkins University, The: *See—*
Rabenhorst, David W., 3,737,694.
Johnson, Duane M.: *See—*
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
Johnson, Glover Douglas, to Bell Telephone Laboratories, Incorporated. Time division switching system. 3,737,586, Cl. 179-15.0aq.
Johnson, Jerold E. Loading ramp for trucks and trailers. 3,737,058, Cl. 214-85.000.
Johnson, Kenneth W. Shock attenuating device. 3,737,154, Cl. 267-153.000.
Johnson, Lawrence P.; and Kitchin, Oscar G., to General Motors Corporation. Spring mounting arrangement for one-way roller clutch. 3,737,015, Cl. 192-45.000.
Johnson, Leonard L.; Mahoney, Tennis; and Hart, Harry L., to Lincoln Logotype Co., Inc. Rotary imprinter with ink wheel having temperature controlled ink pad. 3,736,870, Cl. 101-329.000.
Johnson, William H., to Patent & Development of N.C., Inc. Power rotated device for dispersing fluids into a gaseous environment. 3,737,101, Cl. 239-225.000.
Johnston, James Stewart, to Rosemount Engineering Company, Limited. Electrical power pick-up for vehicles. 3,737,590, Cl. 191-45.00r.
Joly, Francois: *See—*
Thuries, Edmond; and Joly, Francois, 3,737,819.
Jones, Alan L.; Judson, George T.; Kellogg, Robert M.; and Kruger, Victor R., to International Business Machines Corporation. Blood processing control apparatus. 3,737,096, Cl. 233-19.00a.
Jones, Harry S., to Chrom-Tronics, Inc. Relief photograph conversion printing apparatus. 3,737,229, Cl. 355-78.000.
Jones, Howard: *See—*
Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., 3,737,455.
Jones, Lewis E.; and Wilkinson, Richard W., to Mallory, P. R., & Co., Inc. Cam operated timer switch assembly with manually adjustable cam and clutch mechanism. 3,737,597, Cl. 200-38.0ba.
Jones, Norman R.: *See—*
Davis, Oliver Thurston; and Jones, Norman R., 3,737,626.
Jones, Robert T., to United States of America, National Aeronautics and Space Administration. Dual-fuselage aircraft having yawable wing and horizontal stabilizer. 3,737,121, Cl. 244-13.000.
Jones, William R.: *See—*
Kreider, Benjamin A.; Jones, William R.; Metalsky, William J.; and Gibb, Thomson B., 3,737,553.

Jorgensen, Leif G. Film editing device. 3,737,219, Cl. 352-129.000.
Joslyn Mfg. and Supply Co.: *See—*
Cunningham, Francis V., 3,737,556.
Jucker, Ernst; Ebnother, Anton; and Bastin, Jean-Michel, to Sandoz Ltd.; a/k/a Sandoz AG. Compositions and methods utilizing 2,5,-dimethyl-1 3,4,9α-tetrahydro-2h Indino [1,2-c] pyridine. 3,737,544, Cl. 424-263.000.
Judson, George T.: *See—*
Jones, Alan L.; Judson, George T.; Kellogg, Robert M.; and Kruger, Victor R., 3,737,096.
Jung, Rolf, to Krauss u. Reichert Spezialmaschinenfabrik. Slicing machine for expanded plastics and similar materials. 3,736,820, Cl. 83-4.000.
Junike, Wilhelm August Karl; and Hauck, Theodor Franz, to Werkzeugmaschinenfabrik Gildemeister & Comp. AG, mesne. Method for determining, without physical contact, the swivel position of a body clamped into a rotary support. 3,737,753, Cl. 318-602.000.
Just, Christian: *See—*
Alt, Hans Rudolf; Just, Christian; and Wildbolz, Rudolf, 3,736,624.
Kabelitz, Hans, to Gebruder Sucker Machingladbach. Method for controlling the filling or weighting absorption of a fibrous material. 3,737,338, Cl. 117-102.001.
Kabushiki Kaisha: *See—*
Kojki, Kenichi, 3,736,743.
Kabushiki Kaisha Chiyoda: *See—*
Gomi, Yoshiyuk, 3,737,647.
Kabushiki Kaisha Ricoh: *See—*
Fujimoto, Sakae, 3,737,875.
Kabushiki Kaisha Suwa Seikosha: *See—*
Shimodaira, Tadayoshi; and Naito, Okito, 3,737,805.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kuno, Hiroshi; Suzuki, Kenji; and Ishikawa, Mineo, 3,737,684.
Kabushiki-Kaisha Eishin: *See—*
Funakubo, Toshiei, 3,736,828.
Kadow, Hermann, to Siemens Aktiengesellschaft. Selection matrix protected against overcharging and designed for a data memory having random access. 3,737,859, Cl. 340-166.00r.
Kaiser Aluminum & Chemical Corporation: *See—*
King, William R., 3,737,514.
Kajima Corporation: *See—*
Muto, Kiyoshi; Itoh, Takao; and Ohmori, Nobutsugu, 3,736,712.
Kajiwara, Hitachi: *See—*
Fujino, Nobuhiro; and Kajiwara, Hitachi, 3,736,782.
Kalen, Stuart E., to Cogsdill Tool Products, Inc. Finishing device for internal and external surfaces. 3,736,633, Cl. 29-90.00r.
Kali-Chemie Aktiengesellschaft: *See—*
Paucksch, Heinrich; Rudolph, Werner; and Massonne, Joachim, 3,737,471.
Kalish, Joseph, to International Telephone and Telegraph Corporation. High voltage supply for depressed collector traveling wave tube. 3,737,713, Cl. 315-3.500.
Kalle Aktiengesellschaft: *See—*
Dietrich, Roland, 3,737,320.
Kalopissis, Gregoire: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; de Beaulieu, Henri Philippe; and Abegg, Jean-Louis, 3,736,944.
Kamangar, Parviz. Artificial rumen stimulator and method of administering same. 3,736,905, Cl. 119-51.000.
Kamberg, Eduard F., to Chicago Dryer Company. Feeder apparatus. 3,736,678, Cl. 38-143.000.
Kameda, Kazuhiko: *See—*
Sakuragi, Johji; and Kameda, Kazuhiko, 3,737,911.
Kamena, Karl W., to Dow Chemical Company, The. Method for modifying plastic surfaces. 3,737,499, Cl. 264-134.000.
Kanda, Tetsuo: *See—*
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, 3,737,844.
Kandler, Georg: *See—*
Lutz, Alfons; and Kandler, Georg, 3,737,194.
Kaneko, Haruo; and Yano, Kaoru, to Nippon Electric Company, Limited. Malfunction monitoring equipment for a time division multiplexed transmission system. 3,737,584, Cl. 179-15.0bp.
Kanor, Steven, to Lorton Laboratories, Ltd. Disposable shoe covering. 3,737,723, Cl. 317-213.000.
Kao Soap Co., Ltd.: *See—*
Mori, Akira; Nagata, Yozi; and Nakagawa, Hiromi, 3,737,378.
Kaprelian, Edward K.; and Carroll, Howard I., to United States of America, Army. Electrical initiation of percussive-primed cartridges. 3,736,837, Cl. 89-28.00r.
Karger, Michael H.: *See—*
Mazur, Yehuda; and Karger, Michael H., 3,737,447.
Karig, Horace L., to United States of America, Navy. Supercritical thermal power system using combustion gases for working fluid. 3,736,745, Cl. 60-39.020.
Karino, Shinobu: *See—*
Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, 3,737,817.
Karlan, Jac H. Combination vibration isolator and shock absorber. 3,737,155, Cl. 267-136.000.
Karll, Robert E.; and Piasek, Edmund J., to Standard Oil Company (Indiana). Bis-methylol compounds. 3,737,465, Cl. 260-619.00a.
Karrip, Alexander A.: *See—*
Barecki, Chester J.; and Karrip, Alexander A., 3,737,198.
Karsten, Kenneth S.; and Beadley, Charles Edward, Jr., to Vanderbilt, R. T., Company, Inc. Wettable and dispersible powders. 3,737,551, Cl. 424-286.000.
Kashden, Richard Paul: *See—*
Tellerman, Edward M.; Kashden, Richard Paul; Schussel, Edward W.; and Vossen, Robert J., 3,737,112.
Kasten, Walter, to Bendix Corporation, The. Filter for polymer processing and method of manufacture. 3,737,036, Cl. 210-70.000.
Kathawala, Faizulla G., to Sandoz-Wander, Inc. Cis-3,4-diarylcyclopentylidene- and 1-cyclopentene-1-acetic acids and derivatives. 3,737,451, Cl. 260-469.000.
Kato, Toshio; and Ichihara, Tatsuro, to Omron Tateisi Electronics Co. Traffic signal control system. 3,737,847, Cl. 340-35.000.
Katsumata, Mitsuru: *See—*
Yabe, Shinichi; and Katsumata, Mitsuru, 3,737,113.
Katz, Bernard R., to Lummus Company, The. Stored energy stabilization system. 3,737,754, Cl. 320-1.000.
Katzman, James A., to Hewlett-Packard Company. Stack register renamer. 3,737,871, Cl. 340-172.500.
Kaufman, Jesse C.: *See—*
Blau, Donald Z.; and Kaufman, Jesse C., 3,737,233.
Kawada, Shoji. Facial massager. 3,736,921, Cl. 128-56.000.
Kawaguchiko Seimitsu Kabushiki Kaisha: *See—*
Yokoyama, Eisuke, 3,737,596.
Kawakami, Kenneth Nobuo, to Litton Systems, Inc. Microwave oscillator with multiple gunn diodes in a cavity resonator. 3,737,802, Cl. 331-96.000.
Kawasaki, Akihiro: *See—*
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,416.
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,417.
Kaye, David Arnold. Counter flow Genka head. 3,737,260, Cl. 425-113.000.
Kaye, Gordon E.; and Mallory, Henry Rogers, to Mallory, P. R., & Co., Inc. Disposable flashlight. 3,737,650, Cl. 240-10.660.
Kazen, Dave R.: *See—*
Briggs, Lloyd A.; Kazen, Dave R.; and Viers, Val R., 3,737,222.
Kearns, Robert W., to Tann Co. Motor speed control. 3,737,750, Cl. 318-443.000.
Kearsley, Wayne A., to Flash Technology Corporation of America. Sharp cut off light beacon. 3,737,645, Cl. 240-3.000.
Keces, Mervyn L., to Tarrson Company. Ice cream cone sand toy. 3,736,697, Cl. 46-17.000.
Keck, Donald B.; Schultz, Peter C.; and Zimar, Frank, to Corning Glass Works Corporation. Method of forming optical waveguide fibers. 3,737,292, Cl. 65-3.000.
Keeffe, William M.: *See—*
Waymouth, John F.; Keeffe, William M.; and Gungle, W. Calvin, 3,737,710.
Keiser, Markus: *See—*
Rossi, Guido; and Keiser, Markus, 3,737,116.
Kel-Lite Industries, Inc.: *See—*
Nelson, Norman C.; and Patti, Frank S., 3,737,649.
Kelley, Jerry O., to Arvin Industries, Inc. Flexible disc with air intake in turntable. 3,737,880, Cl. 340-174.10e.
Kelley, Karen A. Decision making board game apparatus. 3,737,167, Cl. 273-134.00c.
Kellogg Company: *See—*
Basso, Jude A.; Lemaire, Normand A.; and Fulger, Charles V., 3,737,326.
Kellogg, Robert M.: *See—*
Jones, Alan L.; Judson, George T.; Kellogg, Robert M.; and Kruger, Victor R., 3,737,096.
Kelly, Dale E.; and Gerdes, Charles W., Jr., to Philips Petroleum Company. Vulcanizable blend of a polyacrylate with a butadiene polymer. 3,737,482, Cl. 260-876.00b.
Kelrick, Joseph. Adjustable ring having bridge element and firmly secured notched latch bar. 3,736,770, Cl. 63-15.700.
Kempermann, Theo: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,737,438.
Kendall Company, The: *See—*
Such, John J.; and Olson, Arthur R., 3,737,368.
Taylor, Glenn N., 3,736,939.
Kendall, Stephen F.: *See—*
Kessler, Frank L.; and Kendall, Stephen F., 3,736,599.
Kennamental Inc.: *See—*
Stephenson, Earle W., 3,737,199.
Kenney Manufacturing Company: *See—*
Williamson, John E., 3,736,620.
Kenton, Joseph R., to Phillips Petroleum Company. Polymercaptan polymeric sealant formulation. 3,737,415, Cl. 260-79.000.
Keppler, Dietrich; Lesch, Rainer; Reutter, Werner; and Decker, Karl, to Roth, Carl, ohg. Method for causing hepatitis in animals. 3,737,525, Cl. 424-180.000.
Kerstetter, Donald R.: *See—*
Decker, John J.; and Kerstetter, Donald R., 3,737,342.
Kessler, Frank L.; and Kendall, Stephen F., to Corson, Ben. Swimming pool construction. 3,736,599, Cl. 4-172.190.
Kessler, Lawrence W., to Zenith Radio Corporation. Ultrasonic visulization by pulsed Bragg diffraction. 3,737,573, Cl. 178-7.50d.
Ketelaar, Peter, to U.S. Philips Corporation. Colour television receiver. 3,737,563, Cl. 178-5.40r.

Ketterer, Dieter: *See—*
Moller, Tilo; and Ketterer, Dieter, 3,736,686.

Kffalas, John H.: *See—*
Hess, George A.; Kffalas, John H.; and MacInnes, Richard D., 3,737,874.

Kibler, Willis L., to McCord Corporation. Apparatus for obtaining a controlled rectilinear movement of a rotatably driven actuator member. 3,736,802, Cl. 74-89.150.

Kidde, Walter, & Company, Inc., mesne: *See—*
Sterner, Russell L., 3,736,710.

Kiehl, Edmund: *See—*
Gutermann, Iraugott; and Kiehl, Edmund, 3,736,957.

Kieras, Joseph A.: *See—*
Bonetti, Giovanni A.; Rosenthal, Rudolph; Kieras, Joseph A.; and Wise, William B., 3,737,518.

Kiizumi, Rikihachiro, to Cosmo Toys Manufactory Limited. Car track. 3,736,700, Cl. 46-206.000.

Killian, William H., to Park-Ohio Industries, Inc. Method and circuit for interconnecting a plurality of inductors at the output transformer secondary. 3,737,611, Cl. 219-10.750.

Kilmer, Bill G., to Mallory, P. R., & Co., Inc. Shaded pole synchronous motor. 3,737,695, Cl. 310-162.000.

Kimberly-Clark Corporation: *See—*
Townsend, Bruce A., 3,736,903.

Kind, Dieter: *See—*
Salge, Jurgen; and Hartel, Hagen, 3,737,724.

King Instrument Corporation: *See—*
King, James L., 3,737,358.

King, James L., to King Instrument Corporation. Splicer head assembly for use in splicing tape to leaders. 3,737,358, Cl. 156-502.000.

King, William R., to Kaiser Aluminum & Chemical Corporation. Extraction of alumina from ores. 3,737,514, Cl. 423-121.000.

Kirkpatrick, Burnard M., to Teledyne Industries, Inc. Multiple channel dry-process film recorder. 3,737,913, Cl. 346-34.000.

Kirkpatrick, Kenneth Lawrence: *See—*
Kulak, John; and Kirkpatrick, Kenneth Lawrence, 3,736,735.

Kish, George R.; and Swanson, Kenneth B., to Midland-Ross Corporation. Pressure responsive piston actuated switch and valve means. 3,737,603, Cl. 200-82.00d.

Kishida, Hideko: *See—*
Hashimoto, Koichi; and Kishida, Hideko, 3,737,045.

Kitajima, Susumu; and Shibasaki, Katsutami, to Kurita Machinery Manufacturing Company, Limited. Filter press. 3,737,041, Cl. 210-228.000.

Kitamori, Teruaki; and Takeda, Naozi, to Matsushita Electric Industrial Co., Ltd. Commutator motor. 3,737,697, Cl. 310-207.000.

Kitano, Akira: *See—*
Wakamatsu, Hisato; and Kitano, Akira, 3,737,887.

Kitchin, Oscar G.: *See—*
Johnson, Lawrence P.; and Kitchin, Oscar G., 3,737,015.

Kiwaki, Hisakatsu; Sato, Hiroshi; and Kuwabara, Takeo, to Hitachi, Ltd. Voltage control apparatus for an alternating current generator. 3,737,760, Cl. 322-28.000.

Kiwalle, Jozef, to Production Technology Inc. Clamping device. 3,737,157, Cl. 269-31.000.

Kleiber, Walter: *See—*
Brandl, Ernst; Kleiber, Walter; and Knauseder, Franz, 3,737,375.

Klein, Nicholas L., Jr., to Capelle, Louis C. Device. 3,736,605, Cl. 5-348.0wb.

Klein, Norman E., to Deering Milliken Research Corporation. Extrusion apparatus. 3,737,262, Cl. 425-113.000.

Kleissler, Edwin A., Jr., to Kleissler, G.A., Company. Waste material separator and collector. 3,736,728, Cl. 55-341.000.

Kleissler, G.A., Company: *See—*
Kleissler, Edwin A., Jr., 3,736,728.

Klemp, Hans-Joachim: *See—*
Redlich, Horst; and Klemp, Hans-Joachim, 3,737,589.

Klemt, Arthur. Method of classifying characters wherein the effects of variations in contrast between a presented character and its backbround and variations in background brightness are reduced, and the apparatus therefor. 3,737,854, Cl. 340-146.3ag.

KMS Industries, Inc.: *See—*
Culler, J. Glenn, 3,737,224.
Jahnke, William R., 3,725,844.

Knauseder, Franz: *See—*
Brandl, Ernst; Kleiber, Walter; and Knauseder, Franz, 3,737,375.

Knight, Lindsay Charles. Target holder rigidey securing small arms targe and transducer mounted thereon. 3,737,166, Cl. 273-102.20s.

Knitter, James B., to Intronics Incorporated. Hypotenusal square-rooting for C.R.T. display corrections and the like. 3,737,641, Cl. 235-197.000.

Knobloch, John C.; and Shepard, Ray M., to Fairfield Manufacturing Company, Inc., mesne. Planetary reduction drive. 3,737,000, Cl. 180-43.00b.

Knudsen Creamery Co. of California: *See—*
Mayer, Bromley M.; and Trickel, Ralph J., 3,737,327.

Kobayashi, Kingo; and Nishizawa, Koji, to Fuji Photo Film Co., Ltd. Film casting process. 3,737,509, Cl. 264-212.000.

Kobayashi, Tutomu: *See—*
Kumasaka, Sadao; Suzuki, Satomi; Yoshino, Takeo; and Kobayashi, Tutomu, 3,737,400.

Kobe Steel, Ltd.: *See—*
Toyama, Akira; Matsumoto, Itsuro; and Izumichi, Tetsuo, 3,736,762.

Koch, Carl; and Lipshutz, Joel Leon, to Techcrete, Inc. Building system. 3,736,709, Cl. 52-97.000.

Koch, Hans Adalbert: *See—*
Krall, Heribert; and Koch, Hans Adalbert, 3,736,979.

Koch, Theodor, to Messrs. Heckler & Koch GmbH. Firearm barrel. 3,736,693, Cl. 42-78.000.

Kocks, Friedrich: *See—*
Leeuwestein, Kurt, 3,737,050.

Kockumi Mekamisha Verkstandi AB: *See—*
Oldenburg, Jerx Gunnar; and Rosenberg, Allan Yngve Teodor, 3,737,664.

Kocsis, Louis L.: *See—*
Buch, Roman; and Kocsis, Louis L., 3,737,793.

Koenig, Paul W., to General Electric Company. Continuous strip processing of semiconductor devices and novel bridge construction. 3,737,738, Cl. 317-234.00r.

Koenn, Hubert J.: *See—*
Rietz, Earl B.; McCloud, James R.; Koenn, Hubert J.; and Wall, David A., 3,737,831.

Kofink, Siegfried, to Esslinger, J. Eberspacher. Device for the combustion of burnable components of exhaust gases. 3,737,286, Cl. 23-277.00c.

Kohl, Willibald F.; Sourby, John C.; and Ellinger, Rudolph H., to Stauffer Chemical Company. Process for the pasteurization of egg whites. 3,737,330, Cl. 99-215.000.

Kohler, Armin: *See—*
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, 3,737,420.

Kohner, Michael R. Collapsible table. 3,736,884, Cl. 108-48.000.

Kohren-Keller A.G.: *See—*
Plontke, Erich, 3,737,362.

Koide, Hideo: *See—*
Kudoh, Tetsuo; and Koide, Hideo, 3,737,598.

Koike, Mitsuru: *See—*
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, 3,737,373.

Kojima, Kiyoshi; and Abe, Toshiro, to Matsushita Electric Works, Ltd. Control system for electric circuit utilizing photosensitive solid oscillator. 3,737,803, Cl. 331-107.00r.

Kojki, Kenichi, to Kabushiki Kaisha. Timepiece regulating mechanism vibration. 3,736,743, Cl. 58-109.000.

Kominami, Takuji, to Matsushita Graphic Communication Systems, Inc. Facsimile scanning apparatus. 3,737,575, Cl. 178-7.600.

Koninklijke Emballage Industrie Van Leer N.V.: *See—*
Coppens, Matheus J. M.; and Steen, Heinrich J., 3,736,893.

Konishiroku Photo Industry Co., Ltd.: *See—*
Inoje, Isaburo; Hanzawa, Teruo; and Eneo, Takaya, 3,737,318.

Kontz, Robert F., to Owens-Illinois, Inc. Safety device for blow molding machine. 3,737,267, Cl. 425-154.000.

Kontz, Robert F., to Owens-Illinois, Inc. Blow needle and valve. 3,737,275, Cl. 425-387.00b.

Kooi, Else: *See—*
Hoeberechts, Arthur Marie Eugene; and Kooi, Else, 3,737,701.

Kooi, Else; and Hoeberechts, Arthur Marie Eugene, to U.S. Philips Corporation. Camera tube target with projecting P-type regions separated by grooves covered with silicon oxide layer approximately one-seventh groove depth. 3,737,702, Cl. 313-66.000.

Kopp, Richard F. Vehicle safety belt sensor system. 3,737,850, Cl. 340-52.00e.

Kornfeld, Edmund C., to Lilly, Eli, and Company. Alpha-tetrazolyl-6-substituted tryptamine and -alpha-tetrazolyl-5,6-disubstituted tryptamine compounds. 3,737,436, Cl. 260-308-d.

Korpel, Adrianus, to Zenith Radio Corporation. Solid-state signal distribution system. 3,737,785, Cl. 325-442.000.

Kory Industries, Inc., mesne: *See—*
Pencyla, Giedrius, 3,737,165.

Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, to Toyo Soda Manufacturing Co., Ltd. Graft copolymerization of maletic anhydride and an alpha olefin onto an ethylene-vinyl acetate copolymer. 3,737,483, Cl. 260-878.00r.

Kosta, Peter L.: *See—*
Jacuzzi, Roy A.; and Kosta, Peter L., 3,736,924.

Kraftco Corporation: *See—*
Giroux, Gerald L., 3,737,048.

Krajewski, A. J., Manufacturing Company: *See—*
Palson, Richard C. J., 3,737,067.

Krall, Heribert; and Koch, Hans Adalbert, to Technica-Guss GmbH. Die for tube profiles. 3,736,979, Cl. 164-281.000.

Kratomi, Shunsei. Stereoscopic apparatus having liquid crystal filter viewer. 3,737,567, Cl. 178-6.500.

Krauer, Otto Albert, to Otis Elevator Company. Servomechanism including a polyphase alternating current synchronous motor. 3,737,747, Cl. 318-178.000.

Krauja, Ziedonis I.; and Opperman, Kenton C., to Caterpillar Tractor Company. Fuel injection pump with timing port. 3,737,258, Cl. 417-499.000.

Krauss u. Reichert Spezialmaschinenfabrik: *See—*
Jung, Rolf, 3,736,820.

Kreider, Benjamin A.; Jones, William R.; Metalsky, William J.; and Gibb, Thomson B., to Albar Corporation. Vacuum electric furnace. 3,737,553, Cl. 13-25.000.

Kreischmer, Willi K.; and Heady, Paul A., Jr., to Lockheed Missiles & Space Company. Open loop on-demand variable flow gas generator system with a two-position injector. 3,736,749, Cl. 60-39.74a.

Kress, James Henry; Michael, Richard Arlo; and Madson, Lyle Robert, to Deere & Company. Combined hydrostatic and mechanical transmission. 3,736,813, Cl. 74-740.000.
Kresta, Erich: *See—*
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, 3,736,972.
Krimm, Heinrich; Lenz, Gunther; and Schnell, Hermann, to Bayer Aktiengesellschaft. Thermoplastic aromatic polyureas. 3,737,413, Cl. 260-77.50c.
Krohn-Hite Corporation: *See—*
Kulas, William C., 3,737,642.
Kroyer, Karl Kristian Kobs: *See—*
Kroyer, Karl Kristian Kobs; and Nielsen, Erik (said Nielsen assor. to said), 3,736,861.
Kroyer, Karl Kristian Kobs; and Nielsen, Erik, said Nielsen assor. to said Kroyer, Karl Kristian Kobs. Cooking utensil with gauge. 3,736,861, Cl. 99-343.000.
Kruck, Ralph E., to VCA Metal Fabrications, Inc. Plastic hair wave device and method of waving hair. 3,736,945, Cl. 132-9.000.
Kruger, Victor R.: *See—*
Jones, Alan L.; Judson, George T.; Kellogg, Robert M.; and Kruger, Victor R., 3,737,096.
Krumwiede, Leland J., to Nomeco Building Specialties, Inc. Prefabricated walls. 3,736,715, Cl. 52-309.000.
Krupp Fried. Gesellschaft mit beschrankter Haftung: *See—*
Stander, Jurgen, 3,737,799.
Krutz, Kenneth W. Elevating skipper chair for boats. 3,736,897, Cl. 114-.500.
Kubo, Seitoku: *See—*
Ito, Shin; and Kubo, Seitoku, 3,736,815.
Kudman, Irwin; and Schmelz, Carl Michael, to RCA Corporation. Protected thermoelectric elements and method of protecting same. 3,737,345, Cl. 136-238.000.
Kudoh, Tetsuo; and Koide, Hideo, to Rythm Watch Company, Limited. Timing switch mechanism with manual adjustable cam. 3,737,598, Cl. 200-38.00r.
Kuhnis, Hans Herbert; and Denss, Rolf, to Ciba-Geigy Corporation. Antitussive compositions and method with isonipecotic acid derivatives. 3,737,538, Cl. 424-248.000.
Kuhnke, H. Elektrotechnik GmbH: *See—*
Hodler, Karl, 3,737,143.
Kulak, John; and Kirkpatrick, Kenneth Lawrence, to Deere & Company. Mechanism for retaining the wing section of an implement in its raised position. 3,736,735, Cl. 56-13.600.
Kulas, William C., to Krohn-Hite Corporation. Function generating using piece-wise linear approximation. 3,737,642, Cl. 235-197.000.
Kumaki, Kozo, to Nakamichi Kikai Co., Ltd., Nichimen Co., Ltd. and Nippon Pneumatic Manufacturing Co., Ltd. Slag removing equipment for high temperature furnaces. 3,736,615, Cl. 15-104.10c.
Kumasaka, Sadao; Suzuki, Satomi; Yoshino, Takeo; and Kobayashi, Tutomu, to Toyo Rubber Chemical Industrial Corporation. Self-extinguishable polyurethane foam. 3,737,400, Cl. 260-2.5aj.
Kuno, Hiroshi; Suzuki, Kenji; and Ishikawa, Mineo, to Kabushiki Kaisha Toyota Chuo Kenkyusho and Toyoda Koki Kabushiki Kaisha. System for compensating for drift in semiconductor transducers. 3,737,684, Cl. 307-308.000.
Kunz, Miles C.; and Esvang, Robert L., to Sun Electric Corporation. Meter movement and limit stop. 3,737,772, Cl. 324-154.000.
Kurier Corporation: *See—*
Hayes, Thomas J., Jr.; and Gruller, David L., 3,737,180.
Kurita Machinery Manufacturing Company, Limited: *See—*
Kitajima, Susumu; and Shibasaki, Katsutami, 3,737,041.
Kurita, Takashi: *See—*
Shibata, Kazuo; and Kurita, Takashi, 3,737,234.
Kurz, Rainer, to Tennelec, Inc. Variable gain amplifier system. 3,737,794, Cl. 330-9.000.
Kuse, Takashi: *See—*
Iwai, Naoji; and Kuse, Takashi, 3,737,308.
Kuss, Alvin P. Painting guard. 3,736,904, Cl. 118-505.000.
Kuwabara, Takeo: *See—*
Kiwaki, Hisakatsu; Sato, Hiroshi; and Kuwabara, Takeo, 3,737,760.
Kuwana, Kazutaka: *See—*
Okamoto, Toshiaki; Kuwana, Kazutaka; and Sato, Takefumi, 3,737,201.
Kwong Chu, Vincent Hao, to Bethlehem Steel Corporation. Process for producing iron-molybdenum alloy powder metal. 3,737,301, Cl. 75-.5ba.
Kyokuto Boeki Kaisha, Ltd.: *See—*
Terase, Hitoshi; and Namikawa, Sumio, 3,737,769.
La Moreux, Clarence E., to Maurex Inc. Device for testing ball joints, king pins and the like. 3,736,665, Cl. 33-169.00r.
La Porta, Frank Carl: *See—*
Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, 3,737,755.
Labbe, Francis A. M.: *See—*
Molins, Desmond W.; and Labbe, Francis A. M., 3,736,941.
Lachman, Louis A.: *See—*
Motter, John C.; Motter, John C., Jr.; and Lachman, Louis A., 3,736,869.
Lacoray S.A.: *See—*
Dinges, Wolfgang, 3,737,886.
Lademann, Ernest E., to Bendix Corporation, The. Automatic vehicle counting and weighing system. 3,736,999, Cl. 177-208.000.
Lademann, Rudolf: *See—*
Grimm, Richard; Herzog, Willi; and Lademann, Rudolf, 3,736,726.
Ladewski, Bernard F.: *See—*
Potter, Robert H.; and Ladewski, Bernard F., 3,737,146.
Lagrange, Maurice: *See—*
Debergh, Philippe; and Lagrange, Maurice, 3,737,372.
Laird, Alexandra B.; and Bass, Sidney, to Mattel, Inc. Construction toy utilizing real or simulated household tools and simulating a real or imagined living thing. 3,736,696, Cl. 46-17.000.
Lamp, Robert: *See—*
Jennings, Teari James; Vogellaar, Bernard Francis; and Lamp, Robert, 3,736,732.
Lane, William C.: *See—*
Bazler, Seward M.; and Lane, William C., 3,737,371.
Lange, Daniel J.: *See—*
George, Thomas F.; and Lange, Daniel J., 3,737,432.
Langer, Arthur W., Jr., to Esso Research and Engineering Company. Product of alpha monolithiated amine and carbonyl compounds. 3,737,458, Cl. 260-570.00r.
Lanz, William E.: *See—*
Black, William J.; Lanz, William E.; and Wilson, Eugene M., 3,736,664.
Lark, Wayne W.; and Jennings, Marvin D., to International Harvester Company. One handle control for loaders. 3,737,830, Cl. 338-128.000.
Larson, Charles O., to Larson, Chas O., Co. Article support construction. 3,737,131, Cl. 248-223.000.
Larson, Chas O., Co.: *See—*
Larson, Charles O., 3,737,131.
Larson, Ellis DeLoy. Ornamental design structures and method of making the same and components thereof. 3,736,720, Cl. 52-741.000.
Larson, John I.: *See—*
Willard, Roland B.; Walsh, William J.; and Larson, John I., 3,737,627.
Larson, Leland B.: *See—*
Clement, Clyde H.; and Larson, Leland B., 3,737,835.
Larson, Willis A., to Magic Dot Inc. Touch sensitive electronic switch. 3,737,670, Cl. 307-116.000.
Lattke, Horst G., to Emhart Corporation. Film wrapping machine. 3,736,723, Cl. 53-180.000.
Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter, to International Business Machines Corporation. Automatic pin insertion and bonding to a metallized pad on a substrate surface. 3,736,651, Cl. 29-428.000.
Lawrence, Leslie Charles: *See—*
Tusa, John; Lawrence, Leslie Charles; and Plampton, Stanley Norman, 3,736,613.
Lawrence, Ray V.: *See—*
Halbrook, Noah J.; and Lawrence, Ray V., 3,737,453.
Lawrie, James Y.: *See—*
Skewis, John B.; and Lawrie, James Y., 3,736,672.
Lawson, Anthony Newton, to International Standard Electric Corporation. Switch actuating mechanism. 3,737,607, Cl. 200-172.00a.
Lawton, Robert G.: *See—*
Weaver, Cliff V.; Ranken, William A.; and Lawton, Robert G., 3,736,658.
Lay, Jorge, to Lee, Raymond, Organization, Inc. Replaceable electric switch. 3,737,592, Cl. 200-51.140.
Lazenby, Peter G.; and Wondergem, Hendrik M., to Selco Mining Corporation, Limited, mesne. Apparatus for the remote detection of conducting bodies utilizing electromagnetic waveforms exhibiting abrupt discontinuities. 3,737,768, Cl. 324-3.000.
Le Peuvedic, Jean-Pierre; and Quichaud, Claude, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Hydraulically controlled device for modulating the mud. 3,737,843, Cl. 340-18.0cs.
Lear Siegler, Inc.: *See—*
Campbell, Robert Bruce, 3,737,675.
Hedrick, Geoffrey S., 3,737,885.
Lebensfeld, Steven Allen, to Hot Items Incorporated. Pressure-actuated bubble blowing toy. 3,736,694, Cl. 46-7.000.
Lectromelt Corporation: *See—*
Steffora, Theodore J.; and Schempp, Eberhard G., 3,737,153.
Ledex, Inc.: *See—*
Williamson, Burch A., 3,737,593.
Ledford, Adele Korry. Stringed musical instrument. 3,736,830, Cl. 84-285.000.
Lee, Raymond, Organization, Inc.: *See—*
Lay, Jorge, 3,737,592.
Lee, Raymond, Organization, Inc., The: *See—*
Sheehan, Elizabeth R., 3,737,137.
Lee, Sung C.; and Burns, Edward P., to Hubbell, Harvey, Incorporated. Isolated power ground fault detector system. 3,737,765, Cl. 324-51.000.
Lee, William P., II: *See—*
Ruleff, Robert L.; Lee, William P., II; and Childress, Jay W., 3,737,314.
Leeuwestein, Kurt, to Kocks, Friedrich. Wire manufacture. 3,737,050, Cl. 214-1.0bd.
Leffers, Hans Ulrik, to Danfoss A/S. Connecting-rod and method for its manufacture. 3,736,639, Cl. 29-156.50a.
Lefort, Pierre: *See—*
Llop, Helenio; and Lefort, Pierre, 3,737,617.

Legler, Ernst, to Bosch, Robert, Fernsehanlagen Gesellschaft mit beschraenkter Haftung. Linearly controlled amplifier. 3,737,796, Cl. 330-29.000.
Lehrer, Stanley; Robertson, Raymond A.; and Holme, John C., to Electro-Optics Devices Corporation. Automated optical comparator. 3,737,856, Cl. 340-146.30q.
Leiberitz, Walter A.: *See—*
Coleman, Marvin H.; and Leiberitz, Walter A., 3,737,019.
Leibundgut, James A., to Applied Power Industries, Inc. Vibrator apparatus. 3,736,843, Cl. 91-234.000.
Lejdegard, Sixten H.: *See—*
Warn, Herman K.; and Lejdegard, Sixten H., 3,736,969.
Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin, raison Sociale Michelin & Cie. Tire having bead wires tangent to one another. 3,736,974, Cl. 152-362.00r.
Lemaire, Normand A.: *See—*
Basso, Jude A.; Lemaire, Normand A.; and Fulger, Charles V., 3,737,326.
Lenz, Charles E., to North American Rockwell Corporation. Slope responsive signal identification means. 3,737,788, Cl. 328-118.000.
Lenz, Gunther: *See—*
Krimm, Heinrich; Lenz, Gunther; and Schnell, Hermann, 3,737,413.
Lepselter, Martin Paul: *See—*
Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, 3,737,343.
Lesch, Rainer: *See—*
Keppler, Dietrich; Lesch, Rainer; Reutter, Werner; and Decker, Karl, 3,737,525.
Lessor, Delbert L.: *See—*
Wood, Myrick R.; Duane, Bernard H.; and Lessor, Delbert L., 3,736,798.
Levenson, Michael K. Detonable explosive containing dissolved fluorescer. 3,737,349, Cl. 149-89.000.
Lever Brothers Company: *See—*
Hafner, Wolfgang; and Hufnagel, Walter, 3,737,497.
Levesque, Charles J.: *See—*
Spielberg, David Henry; and Levesque, Charles J., 3,736,648.
Levitan, Maurice D., to Thermal Laminating Corporation. Laminating machine. 3,737,359, Cl. 156-522.000.
Levy, Moshe: *See—*
Berger, Gila; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,737,469.
Lhonore, Pierre; Quibel, Jacques; and Senes, Mikheh, to Societe Chimique de La Grande Paroisse. Process for reforming heavy hydrocarbons. 3,737,291, Cl. 48-214.000.
Life Support, Inc.: *See—*
Churchill, John P.; and Thompson, Tommy Lewis, 3,737,287.
Lilly, Eli, and Company: *See—*
Kornfeld, Edmund C., 3,737,436.
Lima, Philip J., to International Business Machines Corporation. Servomechanism stop control. 3,737,751, Cl. 318-463.000.
Lin, Min-Shung. Sequential switch arrangements for operating electrically controlled locks. 3,737,733, Cl. 317-134.000.
Lincoln Logotype Co., Inc.: *See—*
Johnson, Leonard L.; Mahoney, Tennis; and Hart, Harry L., 3,736,870.
Lindburg, Norman Lee; Bonnette, Richard Arthur; and Deegan, Thomas Edward, to RCA Corporation. Numerical display device having filamentary light sources. 3,737,706, Cl. 313-109.500.
Linder, Joseph; and Gallant, Mel M. Polymerizable compositions with improved adhesion containing di- or tripropylene glycol. 3,737,405, Cl. 260-40.00r.
Lindsey, Carl B.: *See—*
McKenzie, Joe A.; and Lindsey, Carl B., 3,737,771.
Linstromberg, William J., to Whirlpool Corporation. Adjustable weight control for a domestic ice maker. 3,736,766, Cl. 62-137.000.
Lipshutz, Joel Leon: *See—*
Koch, Carl; and Lipshutz, Joel Leon, 3,736,709.
Lithoplate, Inc.: *See—*
Thomas, Daniel C., 3,737,407.
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., to United States of America, Navy. Catalyst generator. 3,736,876, Cl. 102-32.000.
Little, William S.: *See—*
Snelling, Christopher; Little, William S.; and Townsend, Robert H., 3,737,310.
Littlefield, Donald Frank: *See—*
Blendinger, Frederick Lawrence; and Littlefield, Donald Frank, 3,737,655.
Litton Systems, Inc.: *See—*
Kawakami, Kenneth Nobuo, 3,737,802.
Liu, Chain T.; and Inouye, Henry, to United States of America, Atomic Energy Commission. Platinum-rhodium-tungsten alloy. 3,737,309, Cl. 75-172.00r.
Lizotte, Robert H.: *See—*
Robillard, Edward G.; and Lizotte, Robert H., 3,736,704.
Llop, Helenio; and Lefort, Pierre, to Societe d'Optique, Precision, Electronique et Mecanique (SOPELEM). Exposure control apparatus for an electron microscope. 3,737,617, Cl. 250-49.50e.
Lloyd, James R., to Esso Production Research Company. Method and apparatus for assembling an offshore structure. 3,736,756, Cl. 61-46.500.
Lockheed Aircraft Corporation: *See—*
Rostad, Nels C., 3,736,958.
Lockheed Missiles & Space Company: *See—*
Kreischmer, Willi K.; and Heady, Paul A., Jr., 3,736,749.
Loeffler, Larry J., to Merck & Co., Inc. Spiro (3.3) heptane amino acids. 3,737,448, Cl. 260-464.000.
Lolkema, Jan: *See—*
Dolfing, Thale; and Lolkema, Jan, 3,736,758.
Lomax, George F., to Mosley, Fred E. Smoke and fumes abatement apparatus. 3,736,888, Cl. 110-8.00a.
Long, John B., to Marmon Group, Inc., The. Apparatus having an operator carrying and protective device. 3,737,006, Cl. 182-112.000.
Long, Robert G.: *See—*
Huebner, Werner P. E.; and Long, Robert G., 3,737,677.
Long Span Bridge Consultants Inc.: *See—*
Nishimura, Akira, 3,736,716.
Long, William D.: *See—*
Fell, Ferol S.; Long, William D.; and McMillen, Kenneth R., 3,736,733.
Loop, Raymond M. Container having a safety stopper. 3,737,063, Cl. 215-9.000.
Lorain Products Corporation: *See—*
Butler, Luther C., Jr., 3,737,674.
Loria, Anthony: *See—*
Salminen, Ilmari Fritiof; and Loria, Anthony, 3,737,316.
Lorinet, Jean-Paul Philippe, to Merlin Gerin, Societe Anonyme. Stand-still-positioning and restartng arrangement for a linear induction motor driven vehicle. 3,736,881, Cl. 104-148.01m.
Lorton Laboratories, Ltd.: *See—*
Kanor, Steven, 3,737,723.
Lougheridge, Frederick A.: *See—*
Biggs, Orrick Howard; Homer, Horace H.; Lougheridge, Frederick A.; and Westlund, Arnold, 3,737,653.
Louisot, Pierre: *See—*
Ebel, Jean Pierre; Colobert, Louis Eugene Marie; and Louisot, Pierre, 3,737,524.
Lovejoy, Inc.: *See—*
Giegerich, Raymond W., 3,736,804.
Loveless, Stanley M., to General Gas Light Company. Gas light with built-in mixing chamber. 3,737,652, Cl. 240-11.000.
Lowey, Roy: *See—*
Williamson, Reginald Ian; and Lowey, Roy, 3,736,857.
Loy, Henry Albert. Silt dredging method. 3,736,677, Cl. 37-195.000.
L.T.W. Electronics Limited: *See—*
Williamson, Reginald Ian; and Lowey, Roy, 3,736,857.
Lubarsky, Andre, Jr., to Telecommunications Technology, Incorporated. Testing technique for phase jitter in communication systems. 3,737,766, Cl. 324-57.00r.
Lucas, Joseph (Industries), Limited: *See—*
Sharpe, John William, 3,737,182.
Lucifer S.A.: *See—*
Stampfli, Harald, 3,737,736.
Ludder, Rodney E.: *See—*
Amberg, Stephen W.; and Ludder, Rodney E., 3,737,093.
Lukas, Josef; and Illig, Dietmar, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H. Multiflash device, particularly flash-cube, with mechanical striking mechanism. 3,737,643, Cl. 240-1.300.
Lukes, Robert M., to General Electric Company. Automatic icemaker including reversible mold cavities. 3,736,767, Cl. 62-349.000.
Lummus Company, The: *See—*
Katz, Bernard R., 3,737,754.
Lund, Kerry G., to Pic-A-Tent-Top Carrier, Inc. Boat carrier for use on recreational vehicles. 3,737,083, Cl. 224-42.10h.
Lunden, John W.: *See—*
Goronkin, Herbert; and Lunden, John W., 3,737,743.
Lunden, Sidney L., to Moore-lem, Inc. Carriage drive for lumber stacker. 3,737,052, Cl. 214-6.0dk.
Lunden, Sidney L., to Moore-lem, Inc. Lumber stacking apparatus. 3,737,053, Cl. 214-6.0dk.
Lundin, Robert S.: *See—*
Cielaszyk, Edward F.; Lundin, Robert S.; and Stellwagen, Frank W., 3,737,746.
Lupert, Rosemarie. Apparatus for proportionally dosing a plurality of liquids. 3,737,073, Cl. 222-134.000.
Lutes, George F., Jr.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,676.
Lutz, Alfons; and Kandler, Georg, to Webasto-Werk W. Baier KG. Lifting and clamping device for rigid sliding roofs of automobiles. 3,737,194, Cl. 296-137.00e.
Lyons, John H.: *See—*
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
Lyons, Vincent J.: *See—*
Blakeslee, A. Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., 3,737,739.
Lysta A/S: *See—*
Hansen, Harry, 3,736,628.
Ma, John Y.; and Zlotnick, Fredrick, to Zenith Radio Corporation. Signal detector for a signal-seeking tuning system. 3,737,565, Cl. 178-5.800.

Mabuchi, Osamo; Toshima, Yoshitaka; and Saio, Takashi, to Sony Corporation. Radio combined with digital clock. 3,736,742, Cl. 58-50.00a.

MacDonald, Robert D., to Cardinal of Adrian, Inc. Connector system. 3,736,834, Cl. 85-7.000.

Machida, Tokuji: *See—*
Horiee, Koichi; Yosioa, Tsunencbo; and Machida, Tokuji, 3,737,554.

MacInnes, Richard D.: *See—*
Hess, George A.; Kffalas, John H.; and MacInnes, Richard D., 3,737,874.

MacKay, Stanley: *See—*
Theodosopoulos, James; and MacKay, Stanley, 3,737,714.

Macken, Francis M.: *See—*
McDermott, John J.; and Macken, Francis M., 3,737,786.

Macrae, Alfred Urquhart: *See—*
Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, 3,737,343.

Mader, Fritz, to Maten AG. Sheet-like element made of plastics materials. 3,737,366, Cl. 161-48.000.

Madson, Lyle Robert: *See—*
Kress, James Henry; Michael, Richard Arlo; and Madson, Lyle Robert, 3,736,813.

Maeda, Kazuo; and Sasaki, Yasuo, to Fujitsu Limited. Method of manufacturing semiconductor device with multilayer wiring structure. 3,737,340, Cl. 117-212.000.

Magdars, John T., to General Fire Extinguisher Corporation. Swivel assembly. 3,736,986, Cl. 169-31.00r.

Magee, John E.: *See—*
Matcovich, John J.; and Magee, John E., 3,737,915.

Magic Dot Inc.: *See—*
Larson, Willis A., 3,737,670.

Magnetics International, Inc.: *See—*
Buus, Harold W.; and Morgan, Donald G., 3,737,822.

Mahoney, Tennis: *See—*
Johnson, Leonard L.; Mahoney, Tennis; and Hart, Harry L., 3,736,870.

Mahood, James A.: *See—*
Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., 3,737,863.

Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., to National Cash Register Company, The. Process for soldering using prefluxed solder powder. 3,736,653, Cl. 29-496.000.

Maine, Nelson D. Drilling attachment for chain saw. 3,736,991, Cl. 173-29.000.

Mallory, Henry Rogers: *See—*
Kaye, Gordon E.; and Mallory, Henry Rogers, 3,737,650.

Mallory, P. R., & Co., Inc.: *See—*
Jones, Lewis E.; and Wilkinson, Richard W., 3,737,597.
Kaye, Gordon E.; and Mallory, Henry Rogers, 3,737,650.
Kilmer, Bill G., 3,737,695.

Malloy, John H.: *See—*
Swanekamp, James E.; and Malloy, John H., 3,737,686.

Maloney, John E., Jr.; and Zaccagni, Richard F., to FMC, Inc. Gutter bracket. 3,737,127, Cl. 248-48.200.

Mangold, Hans; and Adelmann, Hans-Jurgen, to Grundig Electromechanische Versuchsanstalt Max Grundig. Analog storage arrangement using transfluxor. 3,737,775, Cl. 325-37.000.

Manor, Nathan. Tray for storing and drying dishes and kitchen utensils. 3,737,209, Cl. 312-247.000.

Manske, Wendell J., to Minnesota Mining & Manufacturing Company. Pressure change indicator. 3,736,899, Cl. 116-70.000.

Marak, Ralph J.: *See—*
Radnofsky, Matthew I.; Barnett, James H., Jr.; Harrison, Floyd L.; and Marak, Ralph J., 3,736,607.

Marangoni, Elvino; and Webb, Douglass G., Jr., to Shell Oil Company. Rodding device. 3,736,909, Cl. 122-390.000.

Marce Cosmetics, Ltd.: *See—*
Emerman, Allan, 3,736,925.

Marconi Company Limited, The: *See—*
Ellis, Alfred Brian Edwin; and Bunton, Geoffrey Vernon, 3,737,668.

Marconi Instruments Limited: *See—*
Parkyn, John Michael, 3,737,809.

Marden, Carleton S.: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.

Marechal, Gilles Adrien Georges. Connector terminal having a contact socket assembly for receiving the end of a conductor. 3,737,839, Cl. 339-272.00r.

Marhold, Werner: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,737,077.

Marko, Albert J.: *See—*
Nocek, Stanley J.; Marko, Albert J.; and Zenack, Leslie D., 3,737,644.

Marmon Group, Inc., The: *See—*
Long, John B., 3,737,006.

Maroney, Harold W.; Hathcote, Lester R.; and Sparkman, Thomas W. Subsurface well control apparatus and method. 3,737,845, Cl. 340-18.00p.

Marple, Walter L., to Whirlpool Corporation. Detergent composition. 3,737,387, Cl. 252-170.000.

Marquaire, Roger Andre: *See—*
Azalbert, Jean P.; Giraud, Adrien; and Marquaire, Roger Andre, 3,736,754.

Marshall, Arthur N.; Rinehart, James W.; and Gregory, Charles A., Jr., to Traffic Safety Systems, Inc., mesne. Precision vehicle interval detection and signaling system. 3,737,851, Cl. 340-104.00r.

Marten, Hans Friedrich, to Siemag Siegener Maschinenbau G.m.b.H. Rolling mill. 3,736,785, Cl. 72-238.000.

Martens, Douglas A.: *See—*
Heller, Kenneth G.; Ray, Harold T.; and Martens, Douglas A., 3,737,145.

Martens, Richard H.; and Zaffrann, Ralph D., to Eastman Kodak Company. Lithographic printing plate and process. 3,736,872, Cl. 101-462.000.

Martin, Horst G.; and Feer, Ulrich P., to Societe de la Viscose Suisse. Process and apparatus for continuous extrusion of highly-viscous melts. 3,737,506, Cl. 264-176.00f.

Martin, James. Ejection seat escape system. 3,737,126, Cl. 244-151.00b.

Martin, James R., to Block Engineering, Inc. Infrared radiation source. 3,737,625, Cl. 219-553.000.

Martin-Marietta Aluminum, Inc.: *See—*
Christensen, George L., 3,736,793.

Maruyama, Hiroshi: *See—*
Mukaiyama, Teruaki; Ueki, Masaaki; Matsueda, Rei; and Maruyama, Hiroshi, 3,737,423.

Maruyama, Isao: *See—*
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,416.
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,417.

Maruzen Petrochemical Co., Ltd.: *See—*
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,416.
Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, 3,737,417.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Rademacher, Albert, 3,736,962.

Mason, Howard C.; and Sohn, Fred, to Sun Studs, Inc., mesne. Method and apparatus for processing logs. 3,736,968, Cl. 144-312.000.

Mason, Ronald F., to Shell Oil Company. Alpha-olefin production. 3,737,475, Cl. 260-683.15d.

Massa Division, Dynamics Corporation of America: *See—*
Barrow, Gilbert C., 3,736,632.

Massey-Ferguson, Inc.: *See—*
Herrick, Frank T., 3,736,866.

Massey-Ferguson Industries Limited: *See—*
Hirsch, Walter, 3,737,192.

Masson, Maurice; and Warlop, Raymond, to Commissariat a l'Energie. Microwave thickness measuring device utilizing two resonant cavities on either side of the test piece. 3,737,770, Cl. 324-58.50c.

Massonne, Joachim: *See—*
Paucksch, Heinrich; Rudolph, Werner; and Massonne, Joachim, 3,737,471.

Master Lock Company: *See—*
Foote, Daniel J., 3,736,781.

Matcovich, John J.; and Magee, John E. Apparatus for automatic recording of successive measurements such as bowling pin status. 3,737,915, Cl. 346-79.000.

Maten AG: *See—*
Mader, Fritz, 3,737,366.

Mater, Milton H. Drill bit for pole boring machine. 3,737,245, Cl. 408-225.000.

Mathers, Kenneth R.; and Carlson, Reuben T., to Niagara Therapy Manufacturing Corporation. Traveling massager assembly. 3,736,920, Cl. 128-33.000.

Mathias, Robert G., to Hammon Corporation. Electrical musical instrument phase shift vibrato system. 3,737,555, Cl. 84-1.250.

Matsueda, Rei: *See—*
Mukaiyama, Teruaki; Ueki, Masaaki; Matsueda, Rei; and Maruyama, Hiroshi, 3,737,423.

Matsumoto, Itsuro: *See—*
Toyama, Akira; Matsumoto, Itsuro; and Izumichi, Tetsuo, 3,736,762.

Matsuo, Yoshio. Phase synchronizing circuit. 3,737,578, Cl. 178-67.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kitamori, Teruaki; and Takeda, Naozi, 3,737,697.
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, 3,737,740.

Matsushita Electric Works, Ltd.: *See—*
Kojima, Kiyoshi; and Abe, Toshiro, 3,737,803.
Suemasa, Hideo; Honda, Kazuyoshi; Yoda, Kenichi; and Hanahara, Toru, 3,737,732.

Matsushita Graphic Communication Systems, Inc.: *See—*
Kominami, Takuji, 3,737,575.

Mattel, Inc.: *See—*
Laird, Alexandra B.; and Bass, Sidney, 3,736,696.
May, Richard L.; and Flicker, Alcwyn, 3,736,831.

Matthews, Albert John: *See—*
Avis, Victor Arthur; and Matthews, Albert John, 3,737,352.

Mattingly, William Russell, Jr.; and Gregson, Peter Michael, to International Telephone and Telegraph Corporation. Printed circuit board connector. 3,737,838, Cl. 339-186.00m.

Matzek, Lester Tucker, to Warwick Electronics Inc. Television drive control circuit. 3,737,562, Cl. 178-5.40r.

Mauell, Helmut. Lattice assembly, e.g. for mosaic tiles, electric circuit elements and display systems. 3,737,730, Cl. 317-101.00r.
Maurer, Robert D., to Corning Glass Works. Method of forming an economic optical waveguide fibre. 3,737,293, Cl. 65-3.000.
Maurex Inc.: *See—*
La Moreux, Clarence E., 3,736,665.
Maurice, Jean; and Mouttet, Andre, to Automobiles Peugeot and Regie Nationale des Usines Renault. Sealing device for a screwthreaded connection and applications thereof. 3,737,205, Cl. 308-207.00a.
Maxim, John H.: *See—*
Osborn, Harry B., Jr.; and Maxim, John H., 3,736,896.
May, Richard L.; and Flicker, Alcwyn, to Mattel, Inc. Key mount for organ. 3,736,831, Cl. 84-434.000.
Mayer, Bromley M.; and Trickel, Ralph J., to Knudsen Creamery Co. of California. Bakery additive and method. 3,737,327, Cl. 99-91.000.
Maynard, Lawrence A., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Electrically steerable aircraft mounted antenna. 3,737,906, Cl. 343-705.000.
Maytag Company, The: *See—*
Smith, Thomas R., 3,736,775.
Mazur, Yehuda; and Karger, Michael H., to Yeda Research and Development Co., Ltd. Carbyloxy-methylene-sulfonates, their preparation and use in syntheses. 3,737,447, Cl. 260-456.00r.
Mc Campbell, Carroll B.: *See—*
Antonson, Arvid L.; Bigelow, John E.; Stein, Charles R.; Mc Campbell, Carroll B.; and Van Horn, James W., 3,737,212.
Mc Carthy, Stanley: *See—*
Gibbon, John D.; and Mc Carthy, Stanley, 3,736,819.
Mc Cord Corporation: *See—*
Clemett, Edwin F., Jr., 3,737,207.
Haring, John H., 3,737,208.
Mc Dougal, Allan R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,181.
Mc Laughlin, Donald L.: *See—*
Greene, Richard M.; Mc Laughlin, Donald L.; and Paivinen, John O., 3,737,879.
McAfee, Loyd O. Automotive wheel suspension ball joint tongs. 3,736,816, Cl. 81-3.00r.
McAllister, Jack G., to Centuri Engineering Company, Inc. Launching pad assembly for miniature rockets. 3,736,836, Cl. 89-1.814.
McClaren, Jay L. Grain dryer. 3,736,667, Cl. 34-48.000.
McCloud, James R.: *See—*
Rietz, Earl B.; McCloud, James R.; Koenn, Hubert J.; and Wall, David A., 3,737,831.
McCord Corporation: *See—*
Kibler, Willis L., 3,736,802.
McCoy, Donald D.; Shue, Bruce H.; and Gutmacher, Ralph G., to United States of America, Atomic Energy Commission. Count rate discriminator. 3,737,789, Cl. 328-138.000.
McDermott, John J.; and Macken, Francis M. Radio receiver adapted to monitor warning signals. 3,737,786, Cl. 325-466.000.
McDonnell Douglas Corporation: *See—*
Fernandez, Carlos P., 3,736,810.
Nelson, Harold C.; and Sharp, Richard A., 3,737,010.
McFadden, Robert N.: *See—*
Hickory, Roy E.; McFadden, Robert N.; and Delfin, Irwin, 3,737,220.
McGannon, William J.: *See—*
Evvard, John C.; McGannon, William J.; and Vargo, Donald J., 3,736,938.
McGrath, Timothy P.: *See—*
Bloom, Robert A.; Sturtz, Charles R.; and McGrath, Timothy P., 3,736,801.
McGraw-Edison Company: *See—*
Simmons, Harold T., 3,737,595.
McKeen, Leighton R., to Farah Manufacturing Company. Work feed control. 3,736,894, Cl. 112-203.000.
McKenzie, Joe A.; and Lindsey, Carl B., to United States of America, Navy. Quadrant-selective linear phase correlator. 3,737,771, Cl. 324-83.00a.
McLean, Robert E., to Rival Manufacturing Company. Power operated can opener with unique thrust link. 3,736,659, Cl. 30-4.00r.
McMillen, Kenneth R.: *See—*
Fell, Ferol S.; Long, William D.; and McMillen, Kenneth R., 3,736,733.
McVaugh, Arthur K,. Mobile apparatus for salvaging underground and overhead cable. 3,736,822, Cl. 83-155.000.
Mead Corporation, The: *See—*
Bazler, Seward M.; and Lane, William C., 3,737,371.
Mead, Philip E. Seat belt alarm system. 3,737,849, Cl. 340-52.00e.
Medkeff, Arthur, T.: *See—*
Nye, Norman H.; and Medkeff, Arthur, T., 3,737,264.
Medspecs, Inc.: *See—*
Cotey, John, 3,736,919.
Medtronic, Inc.: *See—*
Bolduc, Lee R., 3,737,579.
Meermans, Ronald A.: *See—*
Arnosky, Joseph E.; and Meermans, Ronald A., 3,737,619.
Mees, Robert D.; and Duncan, George I., to General Electrical Company. Integral electrical coil structure. 3,737,823, Cl. 336-96.000.
Megles, John E.: *See—*
Dumbaugh, William H., Jr.; Flannery, James E.; and Megles, John E., 3,737,294.
Melchoir, Frederick C. Internal combustion engine. 3,736,911, Cl. 123-65.0va.
Melchoir, Jean, to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale; Delegation Ministerielle pour l'Armement Direction Technique des Armements Terrestres; Ateliers de Construction d'Issy-les-Moulineaux. Combustion chambers. 3736,752, Cl. 60-13.000.
Menigat, Richard, to Metallgesellschaft Aktiengesellschaft. Method of and apparatus for the combustion of sludge. 3,736,886, Cl. 110-7.00r.
Menn, Julius J.: *See—*
Brokke, Mervin E.; Menn, Julius J.; and Dorman, Stephen C., 3,737,532.
Mercier, Jacques, to Regie Nationale des Usines Renault and Automobiles Peugeot. Air vents. 3,736,858, Cl. 98-406.000.
Merck & Co., Inc.: *See—*
Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S., 3,737,547.
Loeffler, Larry J., 3,737,448.
Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., 3,737,455.
Merlin Gerin, Societe Anonyme: *See—*
Lorinet, Jean-Paul Philippe, 3,736,881.
Merlin Gerins, Societe Anonyme: *See—*
Henry, Jean-Claude; Castelli, Cesar; and Henry, Georges, 3,737,836.
Mertens, William J.: *See—*
Garard, Richard S.; and Mertens, William J., 3,737,102.
Messer. Griesheim G.m.b.H.: *See—*
Gutermann, Iraugott; and Kiehl, Edmund, 3,736,957.
Roeder, Georg; and Schmidt, Claus, 3,736,647.
Messersmith, Robert Earl; and Roncalli, Raffaele Amici, to Hoffmann-La Roche Inc. Use of ipronidazole in combatting swine dysentery. 3,737,546, Cl. 424-273.000.
Messrs. Heckler & Koch GmbH: *See—*
Koch, Theodor, 3,736,693.
Metallgesellschaft Aktiengesellschaft: *See—*
Menigat, Richard, 3,736,886.
Metalsky, William J.: *See—*
Kreider, Benjamin A.; Jones, William R.; Metalsky, William J.; and Gibb, Thomson B., 3,737,553.
Metcalf, Eric, to Solartron Electronic Group Limited, The. Digital voltmeter. 3,737,891, Cl. 340-347.0cc.
Method of forming plastic tubular articles: *See—*
Dunipace, Russell E., 3,737,501.
Mettler, Klaus: *See—*
Fussgaenger, Kurt; Rachmann, Johannes; and Mettler, Klaus, 3,737,828.
Meyercord Co., The: *See—*
Barta, Franz; and Grupp, Alfred F., 3,737,088.
Barta, Franz; and Grupp, Alfred F., 3,737,091.
Mezzanotte, Mario; Carretta, Ferdinando; and Turchetti, Gianni, to Industrie Pirelli S.p.A. Radial tires having a sidewall-stiffening structure. 3,736,973, Cl. 152-354.000.
Micafil A.G.: *See—*
Rossi, Guido; and Keiser, Markus, 3,737,116.
Michael, Richard Arlo: *See—*
Kress, James Henry; Michael, Richard Arlo; and Madson, Lyle Robert, 3,736,813.
Michel, Jean Bernard: *See—*
Trelut, Jean Marie; and Michel, Jean Bernard, 3,737,869.
Michel, John W.: *See—*
Hammond, Roland P.; and Michel, John W., 3,736,755.
Mick, Oskar: *See—*
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, 3,736,972.
Midland-Ross Corporation: *See—*
Kish, George R.; and Swanson, Kenneth B., 3,737,603.
Mikles, Frank G., to Fuller Company. Fluidized solids reactor. 3,737,283, Cl. 432-58.000.
Milburn, Raymond E., Jr. Firearm telescopic range finder. 3,737,232, Cl. 356-18.000.
Miles Laboratories, Inc.: *See—*
Rodriguez, Rodolfo, 3,737,540.
Sternberg, Moshe, 3,737,377.
Miller, Curtis E., to Beckman Instruments, Inc. Illumination device. 3,737,687, Cl. 240-2.180.
Miller, David James: *See—*
Wiewiorowski, Tadeusz Karol; and Miller, David James, 3,737,513.
Miller, James H.; and Schaumburg, Edward G., to Gould Inc. Connection forming apparatus. 3,736,642, Cl. 29-204.000.
Miller, Richard A., to Rusco Industries, Inc. Adjustable width king size bed frames. 3,736,602, Cl. 5-176.00r.
Miller, Thomas F.; and Zeck, Richard C., to FMC Corporation. Cleaning device for bucket elevator. 3,737,025, Cl. 198-229.000.
Milligan, Ronald R.; and Widenhofer, James W., to Sparton Corporation. Self-attaching check valve. 3,736,954, Cl. 137-525.000.
Millman, Samuel. Watchband. 3,737,082, Cl. 224-4.00e.
Mills, Allen William. Self-shaping earplugs. 3,736,929, Cl. 128-152.000.

Milne, Karen Louise Rowden. Dress and method of dressing. 3,736,596, Cl. 2-74.000.
Minchuk, Filipp Leontievich: *See—*
Zinchenko, Vasily Ivanovich; Salmanova, Ljudmila Sergeevna; and Minchuk, Filipp Leontievich, 3,737,324.
Mini-Products, Inc.: *See—*
Monola, Wilbert E., 3,737,907.
Minnesota Mining & Manufacturing Company: *See—*
Manske, Wendell J., 3,736,899.
Minnesota Mining and Manufacturing Company: *See—*
Benassi, Dominic A., 3,737,735.
DeMoss, Dean L., 3,737,582.
Shevlin, Thomas S., 3,736,981.
Wirth, Wayne M., 3,736,777.
Minnich, Reynold E.: *See—*
Phillips, Henry A.; and Minnich, Reynold E., 3,737,148.
Minolta Camera Kabushiki Kaisha: *See—*
Nakamura, Kitamaro; and Doi, Yasuhiko, 3,737,734.
Suzuki, Shogo, 3,736,853.
Mirra-Cote Co., Inc.: *See—*
Rooklyn, Jack, 3,737,087.
Misaqi, Fazlollah Leo. Self-contained air purifier and conditioner unit. 3,736,927, Cl. 128-145.600.
Mishima, Matsuo, to Olympus Optical Co., Ltd. Outer-rotor type D.C. motors. 3,737,693, Cl. 310-67.000.
Mita Industrial Company Limited: *See—*
Washio, Takaji; and Aizawa, Tatsuo, 3,737,159.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Ujiie, Akira, 3,737,616.
Mitsubishi Jushi Kabushiki Kaisha: *See—*
Nagano, Hiroshi; Tomioka, Hideo; Yamataka, Akira; and Yoshida, Hirohiko, 3,737,495.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Hattori, Takeo, 3,737,354.
Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Shirato, Takeshi; and Ogishi, Toshiyuki, 3,737,246.
Yamura, Ietoshi, 3,736,898.
Mitsumo, Hideo, to Nippon Sheet Glass Co., Ltd. Process for producing a ribbon-like glass. 3,737,295, Cl. 65-99.00a.
Miyaki, Kiyoshi: *See—*
Okura, Takao; Miyaki, Kiyoshi; and Arai, Sakuji, 3,736,912.
Miyano, Hiroshi: *See—*
Takeda, Mitsuo; Miyano, Hiroshi; and Nagaoka, Hideyuki, 3,737,705.
Mohawk Data Sciences Corporation: *See—*
Briggs, Henry P., 3,736,868.
Mohler, Werner; Reiser, Mario; and Popendiker, Kurt, to Chemische Werke Albeit Aktiengesellschaft. Certain oxoalkyldimethylxanthines. 3,737,433, Cl. 260-256.000.
Molins, Desmond W.; and Labbe, Francis A. M., to Molins Machine Company, Limited. Cigarettes and the like. 3,736,941, Cl. 131-21.00r.
Molins Machine Company, Limited: *See—*
Molins, Desmond W.; and Labbe, Francis A. M., 3,736,941.
Moller, Tilo; and Ketterer, Dieter, to Heckler & Koch GmbH. Automatic hand firearm with interchangeable magazine. 3,736,686, Cl. 42-6.000.
Monday, William C., to Recognition Equipment Incorporated. Document stacker system. 3,737,160, Cl. 271-64.000.
Monola, Wilbert E., to Mini-Products, Inc. Multiband quad and loop antenna. 3,737,907, Cl. 343-744.000.
Monsanto Company: *See—*
Campbell, Robert Henry; and Wise, Raleigh Warren, 3,737,431.
Pao, Robert K. C.; and Burgener, Willis R., 3,737,640.
Wildi, Bernard S., 3,737,412.
Wolf, William D., 3,737,494.
Monteiro, Hugo Jorge; and Siddall, John B., to Zoecon Corporation. Lower alkyl 5-methylhexo-3,4-dienoates and preparation thereof. 3,737,452, Cl. 260-486.00r.
Monti, Giancarlo: *See—*
Poretti, Isidoro; and Monti, Giancarlo, 3,737,894.
Montres Rolex S.A.: *See—*
Paratte, Daniel, 3,736,741.
Moon, Malcolm W.; and Rizzo, Victor L., to Upjohn Company, The. Compositions method of combatting insects using 1'-variable-1',1'-dihalohalobenzeneazomethanes. 3,737,533, Cl. 424-226.000.
Moore-lem, Inc.: *See—*
Lunden, Sidney L., 3,737,052.
Lunden, Sidney L., 3,737,053.
Morgan Adhesives Company: *See—*
Carlson, Russell L., 3,737,028.
Morgan, Donald G.: *See—*
Buus, Harold W.; and Morgan, Donald G., 3,737,822.
Morgan, George H.; and Nehrig, R. Harlan, to Auto Specialties Manufacturing Company. Vehicle jack. 3,737,147, Cl. 254-108.000.
Mori, Akira; Nagata, Yozi; and Nakagawa, Hiromi, to Kao Soap Co., Ltd. Deodorizing method by film and steam distillation. 3,737,378, Cl. 203-89.000.
Mori, Hideo; and Garcia, Joseph M., to Abex Corporation. Thin film polarization rotation microwave reflectors. 3,737,904, Cl. 343-18.00b.
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, to Cableform Limited. Electrical contactors. 3,737,821, Cl. 335-133.000.
Mos Technology, Inc.: *See—*
Greene, Richard M.; Mc Laughlin, Donald L.; and Paivinen, John O., 3,737,879.
Mosher, Robert H.; d/b/a R. M. Associates: *See—*
Hickey, James R., 3,736,847.
Mosler Safe Company, The: *See—*
Antonio, John, 3,737,690.
Mosley, Fred E.: *See—*
Lomax, George F., 3,736,888.
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, to Japan Atomic Energy Research Institute. Method of decontaminating heavy water cooled and moderated reactor. 3,737,373, Cl. 176-37.000.
Motoki, Sadao: *See—*
Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, 3,737,817.
Motorola Inc.: *See—*
Grenon, Lawrence A.; and Coleman, Michael G., 3,737,704.
Parker, Norman W., 3,737,779.
Russell, Ronald W.; and Solomon, James E., 3,737,800.
Salava, Roger F., 3,737,890.
Zobel, Don William, 3,737,773.
Motter, John C.; Motter, John C., Jr.; and Lachman, Louis A., to Motter, John C., Printing Press Co. Pressure roller device for a rotogravure printing press. 3,736,869, Cl. 101-1 53.000.
Motter, John C., Jr.: *See—*
Motter, John C.; Motter, John C., Jr.; and Lachman, Louis A., 3,736,869.
Motter, John C., Printing Press Co.: *See—*
Motter, John C.; Motter, John C., Jr.; and Lachman, Louis A., 3,736,869.
Mouis, Louis, to Furnas Electric Company. Thermal overload device. 3,737,727, Cl. 317-40.00a.
Mouttet, Andre: *See—*
Maurice, Jean; and Mouttet, Andre, 3,737,205.
Mueller, Hans J., to National Cash Register Company, The. Method of zinc-modified resin manufacture by reacting novolaks with zinc dibenzoate. 3,737,410, Cl. 260-59.000.
Mukaiyama, Teruaki; Ueki, Masaaki; Matsueda, Rei; and Maruyama, Hiroshi, to Sankyo Company Limited. Process for the preparation of a carboxylic acid amide. 3,737,423, Cl. 260-112.500.
Mulwhiteson Development Company: *See—*
White, Fred K., 3,737,526.
Muntzer, Emile; and Muntzer, Paul, to Wibau Westdeutsche Industrie- und Strassenbau Maschinen-Gesellschaft m.b.H. Method and apparatus for mixing bituminous mixtures. 3,737,149, Cl. 259-146.000.
Muntzer, Paul: *See—*
Muntzer, Emile; and Muntzer, Paul, 3,737,149.
Murton, Crawford B., to Air Repair, Inc. Method of applying refractory lining on hot metallurgical ladles, soaking pits and furnaces. 3,737,489, Cl. 264-30.000.
Muto, Kiyoshi; Itoh, Takao; and Ohmori, Nobutsugu, to Kajima Corporation. Composite building structure and walls therefor. 3,736,712, Cl. 52-167.000.
Mutschelknauss, Ralf E.; Schumann, Johannes P.; and Bergman, Manfred, to Institut de Recherche Woog. Method and apparatus for in vivo measuring blood velocity in capillaries. 3,736,918, Cl. 128-2.05f.
Mutual Mining and Refining, Ltd.: *See—*
White, Merwin G.; and White, Donald M., 3,737,381.
Myers, Herbert Arthur, to Deere & Company. Baling attachment for lawn mowers. 3,736,735, Cl. 56-14.500.
Myers, Herbert Arthur, to Deere & Company. Baling attachment for lawn mowers. 3,736,736, Cl. 56-14.500.
Myers, Paul H. Triple bucket hook. 3,737,188, Cl. 294-27.00r.
Nagae, Yasuyuki, to Central Glass Company, Limited. Method and apparatus for automatically detecting defects and irregularities in glass sheet. 3,737,665, Cl. 250-219.0df.
Nagano, Hiroshi; Tomioka, Hideo; Yamataka, Akira; and Yoshida, Hirohiko, to Mitsubishi Jushi Kabushiki Kaisha. Method for manufacturing tubular films of thermoplastic resins. 3,737,495, Cl. 264-95.000.
Nagao, Kimitioshi: *See—*
Urabe, Hitoshi; Nagao, Kimitioshi; and Takano, Masao, 3,737,228.
Nagao, Tsuguki; and Toishi, Toshihiko, to Tokyo Shibaura Electric Co., Ltd. Method and apparatus for sterilizing the interior of a vessel containing a fluid with some void space allowed therein. 3,737,608, Cl. 219-10.550.
Nagaoka, Hideyuki: *See—*
Takeda, Mitsuo; Miyano, Hiroshi; and Nagaoka, Hideyuki, 3,737,705.
Nagata, Yozi: *See—*
Mori, Akira; Nagata, Yozi; and Nakagawa, Hiromi, 3,737,378.
Naito, Okito: *See—*
Shimodaira, Tadayoshi; and Naito, Okito, 3,737,805.
Naito, Yoshiyuki: *See—*
Suetake, Kunihiro; and Naito, Yoshiyuki, 3,737,903.
Nakagawa, Hiromi: *See—*
Mori, Akira; Nagata, Yozi; and Nakagawa, Hiromi, 3,737,378.
Nakamichi Kikai Co., Ltd.: *See—*
Kumaki, Kozo, 3,736,615.
Nakamura, Kitamaro; and Doi, Yasuhiko, to Minolta Camera Kabushiki Kaisha. Copying machine. 3,737,734, Cl. 317-141.00s.
Namikawa, Sumio: *See—*

Terase, Hitoshi; and Namikawa, Sumio, 3,737,769.
Naphtachimie: *See—*
Bailly, Jean Claude, 3,737,476.
Nast, Roland: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,737,438.
National Cash Register Company, The: *See—*
Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,736,653.
Mueller, Hans J., 3,737,410.
Ruleff, Robert L.; Lee, William P., II; and Childress, Jay W., 3,737,314.
National Research Development Corporation: *See—*
Farrar, Trevor Alfred; Hodson, David George; and Peat, Derek, 3,736,895.
National Starch and Chemical Corporation: *See—*
Jarowenko, Wadym; and Rutenberg, Morton W., 3,737,370.
Neary, Richard A., to General Electric Company. Balance weight attachment for turbine wheels. 3,736,811, Cl. 74-573.000.
Neel, Roy E.: *See—*
Smith, Robert W.; Smith, William H.; and Neel, Roy E., 3,737,190.
Neema, Farid J.: *See—*
O'Neill, William F.; Neema, Farid J.; and Hopey, Edward P., 3,737,861.
Negra, John S.; Tourtellotte, John F.; and Warshaw, Abe, to Chemical Construction Corporation. Catalyst for treating combustion exhaust gas. 3,737,396, Cl. 252-466.00j.
Nehrig, R. Harlan: *See—*
Morgan, George H.; and Nehrig, R. Harlan, 3,737,147.
Nelson, Harold C.; and Sharp, Richard A., to McDonnell Douglas Corporation. Retractable post. 3,737,010, Cl. 188-32.000.
Nelson, Norman C.; and Patti, Frank S., to Kel-Lite Industries, Inc. Baton-flashlight. 3,737,649, Cl. 240-6.420.
Nemit, Jeffrey T., to International Telephone and Telegraph Corporation. Doppler navigation beacon system with angular filter. 3,737,908, Cl. 343-754.000.
Nesbitt, William E. Amusement device. 3,736,698, Cl. 46-41.000.
Neufeld, Leo G. Aircraft hangar construction. 3,736,707, Cl. 52-65.000.
Neumann, Malcolm A.; and Hunsberger, Arnold, to Cubic Corporation. Multi-level automatic storage and recovery system for aircraft. 3,737,057, Cl. 214-16.10a.
Neuner, Hans. Meat cutter with angularly adjustable knives. 3,737,111, Cl. 241-292.200.
Neureiter, Norman P.: *See—*
Schutze, Henry G.; Williams, Herschel C.; Neureiter, Norman P.; and Bown, Delos E., 3,737,486.
New Jersey Machine Corporation: *See—*
Rosenberg, Harry, 3,736,722.
Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Planographic printing plate assembly and method of making. 3,736,873, Cl. 101-467.000.
Newman, John W.: *See—*
Green, William S.; and Newman, John W., 3,737,472.
NGK Insulators, Ltd.: *See—*
Takatori, Toshimitsu; Shinoda, Katsuro; and Tsuhoi, Yasuyuki, 3,737,560.
Niagara Therapy Manufacturing Corporation: *See—*
Mathers, Kenneth R.; and Carlson, Reuben T., 3,736,920.
Nibco, Inc.: *See—*
Stalier, John D., 3,737,512.
Nichimen Co., Ltd.: *See—*
Kumaki, Kozo, 3,736,615.
Nicholas and Cosma Creme: *See—*
Nye, Norman H.; and Medkeff, Arthur, T., 3,737,264.
Nicholas, Robert D.; and Clifford, James D., to Eastman Kodak Company. Photographic elements and processes. 3,737,317, Cl. 96-74.000.
Nichols, George M., to Stauffer Chemical Company. Process for preparing aryl alkyl phosphates. 3,737,487, Cl. 260-973.000.
Nicholson, Peter, to British Insulated Callenders Cables Limited. Manufacture of insulated electric cables. 3,737,490, Cl. 264-40.000.
Nickel, Ted Y.: *See—*
Cordi, Vincent A.; and Nickel, Ted Y., 3,737,881.
Nielsen, Edwin, to Ideal Toy Corporation. Cam-controlled boat. 3,736,699, Cl. 46-93.000.
Nielsen, Erik: *See—*
Kroyer, Karl Kristian Kobs; and Nielsen, Erik, 3,736,861.
Nihon Denshi Kabishiki Kaisha: *See—*
Yanaka, Takashi; and Shirota, Kohei, 3,737,659.
Nippon Electric Company Limited: *See—*
Furuoya, Takashi, 3,737,882.
Kaneko, Haruo; and Yano, Kaoru, 3,737,584.
Sakamoto, Kazuo; and Tamura, Ryoji, 3,737,804.
Tomozawa, Atsushi, 3,737,780.
Nippon Kogaku K.K.: *See—*
Ono, Shiego; Hamaguchi, Ichiro; and Toyoda, Kenji, 3,736,851.
Shimizu, Yoshiyuki, 3,737,214.
Nippon Pneumatic Manufacturing Co., Ltd.: *See—*
Kumaki, Kozo, 3,736,615.
Nippon Sheet Glass Co., Ltd.: *See—*
Mitsumo, Hideo, 3,737,295.
Nippondenso Co., Ltd.: *See—*
Wakamatsu, Hisato; and Kitano, Akira, 3,737,887.
Nischk, Gunther: *See—*
Brokmeier, Dieter; Englehard, Helmut; Bentz, Francis; Kohler, Armin; and Nischk, Gunther, 3,737,420.
Nishimura, Akira, to Long Span Bridge Consultants Inc. Means for reducing slippage of steel beam relative to concrete slab. 3,736,716, Cl. 52-334.000.
Nishizawa, Koji: *See—*
Kobayashi, Kingo; and Nishizawa, Koji, 3,737,509.
Nistri, Ugo: *See—*
Vargiu, Silvio; Nistri, Ugo; and Passalenti, Beppino, 3,737,481.
Nnitee Stites of America, National Aeronautics and Space Administration: *See—*
Zurasky, James L., 3,737,237.
Nocek, Stanley J.; Marko, Albert J.; and Zenack, Leslie D., to Bendix Corporation, The. Arrangement for illuminating non-planar surface. 3,737,644, Cl. 240-2.100.
Noda, Meigo. Triple mirror for eye make-up-curved. 3,737,216, Cl. 350-306.000.
Nodurft, Clair A., to General Electric Company. Lighting system with auxiliary lamp control circuit and protective means therefor. 3,737,719, Cl. 315-91.000.
Noel, Eugene M. Automatic muffin tining machine with adjustable split. 3,737,084, Cl. 225-93.000.
Noles, Ronald C.: *See—*
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
Noll, Walter: *See—*
Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, 3,737,336.
Nomeco Building Specialties, Inc.: *See—*
Krumwiede, Leland J., 3,736,715.
Nook, Mary A.; Renis, Harold E.; and Underwood, Gerald E., to Upjohn Company, The. Method for treating influenza viral infections. 3,737,550, Cl. 424-279.000.
Nord, Eric T.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin A., 3,737,107.
Norastrom, Kjell Helge: *See—*
Flinth, Rune Nils Allan; and Nordstrom, Kjell Helge, 3,736,998.
North American Rockwell Corporation: *See—*
Allison, Leroy K., 3,736,963.
Budzyna, Joseph M., 3,736,964.
Cooper, George P., 3,737,679.
Lenz, Charles E., 3,737,788.
Vehrs, Charles L., Jr., 3,737,900.
Nouailles, Noel: *See—*
Croset, Michel; and Nouailles, Noel, 3,737,341.
Novak, George J., to Western Electric Company, Incorporated. Molding apparatus having a tunnel gated movable mold. 3,737,271, Cl. 425-247.000.
Novox, Inc.: *See—*
Pindell, Stuart M., Jr., 3,736,740.
Nowicki, Raymond M. Carburetor air intake filters. 3,736,900, Cl. 116-70.000.
Nowroski, Alvin P.: *See—*
Dickensheets, William E.; and Nowroski, Alvin P., 3,736,915.
Nye, Norman H.; and Medkeff, Arthur, T., to Nicholas and Cosma Creme. Apparatus for making and marking elongated plastic articles. 3,737,264, Cl. 425-134.000.
Obama, Isamu: *See—*
Shimoda, Keitaro; and Obama, Isamu, 3,737,507.
Obeda, Edward G., to Branson Instruments, Inc. Apparatus for exposing sheet material to ultrasonic energy. 3,737,361, Cl. 156-580.000.
Obenshain, David Noel, to Westvaco Corporation. Electronically adjusted variable ratio drive. 3,736,821, Cl. 83-76.000.
O'Brien, Samuel James; Stockel, Richard Frederick; and Herbes, William Frank, to American Cyanamid Company. Tris(hydroxymethyl)phosphine phosphates as flame retardants for textile materials. 3,737,284, Cl. 8-116.300.
Oce-van der Grinten N.V.: *See—*
van Meijel, Henricus J. M.; and van Beek, Gerardus J. H., 3,737,230.
O'Dell, George B., to General Electric Company. Appliance including electric diagnosis means. 3,736,765, Cl. 62-127.000.
Offutt, Elmer Bradley; and Babich, Edward, to Vendo Company, The. Product dispensing apparatus. 3,737,071, Cl. 221-129.000.
Ogawa, Francis T., to Honeywell Inc. Computer flash with remote sensor and two-wire control of flash firing and quench. 3,737,721, Cl. 315-151.000.
Ogishi, Toshiyuki: *See—*
Shirato, Takeshi; and Ogishi, Toshiyuki, 3,737,246.
O'Hagan, Robert M.; De Spautz, Joseph F.; Carroll, James E., Jr.; and Sorensen, Richard H., to State Street Bank and Trust Company, mesne. Collision avoidance system providing a vector signal representative of the distance and bearing between a prime vehile and target object at a predicted closest point of approach therebetween. 3,737,902, Cl. 343-9.000.
O'Hare, Louis Richard. Changing capacity electric generator. 3,737,688, Cl. 310-2.000.
Ohmori, Nobutsugu: *See—*
Muto, Kiyoshi; Itoh, Takao; and Ohmori, Nobutsugu, 3,736,712.
Okada, Katsushi: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuji; and Fujii, Setsuro, 3,737,443.

Okada, Tomi: *See—*
Yabe, Shinichi; and Okada, Tomi, 3,737,662.
Okamoto, Toshiaki; Kuwana, Kazutaka; and Sato, Takefumi, to Aisin Seiki Kabushiki Kaisha. Method and apparatus for generating a control signal for use in a vehicle brake system. 3,737,201, Cl. 303-21.00a.
Okean, Herman C.: *See—*
United States of America, National Aeronautics and Space Administration, 3,737,815.
Okura, Takao; Miyaki, Kiyoshi; and Arai, Sakuji, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for compensation of the operation of negative pressure control type fuel injection apparatus. 3,736,912, Cl. 123-140.0mp.
Oldenburg, Jerx Gunnar; and Rosenberg, Allan Yngve Teodor, to Kockumi Mekamisha Verkstandi AB. Burner monitor apparatus. 3,737,664, Cl. 250-214.00r.
Oleinick, Julius. Educational apparatus. 3,736,671, Cl. 35-9.00c.
Olive-Jones, Michael William; and Randall, Douglas Raymond, to BTR Industries Limited. Crimping or swaging apparatus. 3,736,788, Cl. 72-402.000.
Olivier, James P.: *See—*
Sennett, Paul S.; Olivier, James P.; and Ross, Sydney, 3,737,332.
Olson, Arthur R.: *See—*
Such, John J.; and Olson, Arthur R., 3,737,368.
Olympia Werke AG: *See—*
Helmers, Helmut, 3,737,018.
Olympus Optical Co., Ltd.: *See—*
Mishima, Matsuo, 3,737,693.
Olympus Optical Company Limited: *See—*
Yamashita, Nobuo, 3,737,213.
O'Malley, James J.; and Strickland, Murray C., to Hollymatic Corporation. Meat tenderizer apparatus. 3,736,623, Cl. 17-25.000.
Omron Tateisi Electronics Co.: *See—*
Kato, Toshio; and Ichihara, Tatsuro, 3,737,847.
O'Neal, Wilbert O., to Vendo Company, The. Inclined shelf vending machine. 3,737,070, Cl. 221-6.000.
O'Neill, William F.; Neema, Farid J.; and Hopey, Edward P., to Honeywell Inc. Input/output bus. 3,737,861, Cl. 340-172.500.
Onishi, Hiroshi: *See—*
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, 3,737,373.
Ono, Shiego; Hamaguchi, Ichiro; and Toyoda, Kenji, to Nippon Kogaku K.K. Automatic exposure time control circuit for electronic shutters. 3,736,851, Cl. 95-10.0ct.
Ontario Research Foundation: *See—*
Reid, Sidney G., 3,736,889.
Opperman, Kenton C.: *See—*
Krauja, Ziedonis I.; and Opperman, Kenton C., 3,737,258.
Oroschakoff, Georgi. Process for assembling concrete reinforcement. 3,736,637, Cl. 29-155.00r.
Osborn, Harry B., Jr.; and Maxim, John H., to Park-Ohio Industries, Inc. Method and apparatus for separating end portions from metal can. 3,736,896, Cl. 113-1.00k.
Osheroff, Gene W., to Fluidtech Corporation. Temperature-pressure transducer. 3,737,098, Cl. 236-87.000.
Oshio, Yudo: *See—*
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, 3,737,844.
Ostwald, Erich: *See—*
Zander, Richard L.; Ostwald, Erich; and Sides, Daniel H., 3,736,992.
Oswald, Jacques; and Rainsard, Yves, to Compagnie Industrielle des Telecommunications. Signal-to-noise ratio improving device for receiving systems having two wave collectors. 3,737,783, Cl. 325-367.000.
Otake, Naoji. Screw extruder. 3,737,150, Cl. 259-191.000.
Otey, Felix H.: *See—*
Throckmorton, Peter E.; Aelony, David; Egan, Richard R.; and Otey, Felix H., 3,737,426.
Otis Elevator Company: *See—*
Krauer, Otto Albert, 3,737,747.
Overkott, Franz Josef, to Peddinghaus, Paul Ferd., Firma. Process for heating stamped metal discs. 3,737,609, Cl. 219-10.410.
Owen, Ronald C., to Illinois Tool Works, Inc. Container carrier with integral handle loop. 3,737,069, Cl. 220-94.000.
Owens-Illinois, Inc.: *See—*
Bauman, Francis E., 3,737,020.
Dunipace, Russell E., 3,737,501.
Foote, James B., 3,737,253.
Kontz, Robert F., 3,737,267.
Kontz, Robert F., 3,737,275.
Ward, William R., Jr., 3,736,826.
Owens-Illinois, Inc., mesne: *See—*
Amberg, Stephen W.; and Ludder, Rodney E., 3,737,093.
Pabst Brewing Company: *See—*
Ziffer, Jack, 3,737,376.
Page, Russell D.: *See—*
Beals, Duane E.; and Page, Russell D., 3,737,003.
Paige, Edward George Sydney, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the. Acoustic surface wave device wherein acoustic surface waves may be propagated with an electric feld dependent velocity. 3,737,811, Cl. 333-30.00r.
Paivinen, John O.: *See—*
Greene, Richard M.; Mc Laughlin, Donald L.; and Paivinen, John O., 3,737,879.
Palac, Kazimir, to Zenith Radio Corporation. Envelope for, and method of processing, a color cathode-ray tube. 3,737,065, Cl. 220-2.10a.
Palmer, Timothy Hoyt. Retractable awning structure. 3,736,976, Cl. 160-70.000.
Palson, Richard C. J., to Krajewski, A. J., Manufacturing Company. Plastic box having integrally molded latch. 3,737,067, Cl. 220-60.00r.
Pampus, Gottfried: *See—*
Schnoring, Hildegard; Pampus, Gottfried; Schon, Leverkusen Nikolaus; and Witte, Josef, 3,737,337.
Pao, Robert K. C.; and Burgener, Willis R., to Monsanto Company. Electronic feedback controlled time-division multiplier and/or divider. 3,737,640, Cl. 235-195.000.
Papa, Bernard F.: *See—*
Solov, Edwin G.; and Papa, Bernard F., 3,737,122.
Papas, Constantine S.: *See—*
Hoover, Lawrence E., 3,737,691.
Paquette, Elmer G., to Bjorksten Research. Non-repetitive flashing display mechanism. 3,736,683, Cl. 40-126.00b.
Paratte, Daniel, to Montres Rolex S.A. Device for securing an electrical cell in a timepiece movement. 3,736,741, Cl. 58-23.0ba.
Parham, O. D., to Hughes Aircraft Company. Phase locked frequency modulation demodulator circuit including Colpitts transistor and feedback transistor. 3,737,792, Cl. 329-103.000.
Paris, August F. Short sleeve presser expander. 3,737,080, Cl. 223-70.000.
Park-Ohio Industries, Inc.: *See—*
Armstrong, Robert G., 3,737,610.
Arnosky, Joseph E.; and Meermans, Ronald A., 3,737,619.
Arnosky, Joseph L., 3,737,618.
Gillock, Jack W., 3,737,613.
Killian, William H., 3,737,611.
Osborn, Harry B., Jr.; and Maxim, John H., 3,736,896.
Pfaffmann, George D.; and Hammond, Michael R., 3,737,612.
Parke, Davis & Company: *See—*
Serrell, John J.; Sparks, George C.; and Trowern, Howard M., Jr., 3,737,029.
Parker, Norman W., to Motorola, Inc. Pulse train processing system with discrimination against noise for use with pulse width modulation. 3,737,779, Cl. 325-324.000.
Parkham, O. D., to Hughes Aircraft Company. Phase modulator circuit including colpitts transistor and feedback transistor. 3,737,807, Cl. 332-16.00t.
Parkison, Richard G., to American Standard, Inc. Single lever faucet. 3,736,959, Cl. 137-625.170.
Parkison, Richard Grant, to American Standard, Inc. Oral hygiene device. 3,736,923, Cl. 128-66.000.
Parkyn, John Michael, to Marconi Instruments Limited. Modulated carrier frequency sources. 3,737,809, Cl. 332-31.00r.
Parlato, Philip J., to Alarm Products International, Inc. Trap switch with elongated mounting wire for completing continiuty circuit. 3,737,591, Cl. 200-61.930.
Parsons Chain Company Limited: *See—*
Collier, Paul Arthur, 3,737,023.
Parsons, Ronald, to Singer Company (U.K.) Limited, The, mesne. Connecting rods in combination with a tufting machine. 3,736,891, Cl. 112-79.00r.
Partridge, Charles C.: *See—*
Boswell, Howard G.; and Partridge, Charles C., 3,737,142.
Passalenti, Beppino: *See—*
Vargiu, Silvio; Nistri, Ugo; and Passalenti, Beppino, 3,737,481.
Pastva, John V., Jr., to Eastern Company, The. Door lock. 3,737,183, Cl. 292-7.000.
Patel, Chandrakant Somabhai; and Patel, Rashmikant Somabhai. Pilfer-proof closure for containers. 3,737,064, Cl. 215-42.000.
Patel, Rashmikant Somabhai: *See—*
Patel, Chandrakant Somabhai; and Patel, Rashmikant Somabhai, 3,737,064.
Patent & Development of N.C., Inc.: *See—*
Johnson, William H., 3,737,101.
Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H.: *See—*
Lukas, Josef; and Illig, Dietmar, 3,737,643.
Patti, Frank S.: *See—*
Nelson, Norman C.; and Patti, Frank S., 3,737,649.
Paucksch, Heinrich; Rudolph, Werner; and Massonne, Joachim, to Kali-Chemie Aktiengesellschaft. Process for removing oxygen from tetrafluoroethylene or tetrafluoroethylene-containing gas mixtures. 3,737,471, Cl. 260-653.300.
Paul, Richard Henry; and Wilson, James Perry, to Uniroyal, Inc. Amphibious tires with improved torque resistance properties. 3,736,971, Cl. 152-353.000.
Paul, Wolfgang: *See—*
Benda, Klaus V.; Binder, Horst; and Paul, Wolfgang, 3,737,344.
Paulange, Serge. Automatic arc welding machines. 3,737,614, Cl. 219-60.00a.
Pauls, Edward A.: *See—*
Check, Donald R.; Ader, Gary B.; and Pauls, Edward A., 3,736,612.
Pavel, Raymond F. Row crop header attachment. 3,736,734, Cl. 56-119.000.

Peabody Engineering Corporation: *See—*
Arnold, Orlan M.; and Horn, Michael F., 3,737,105.
Arnold, Orlan M.; and Horn, Michael F., 3,737,106.
Pearson, Kenneth William: *See—*
Dodman, David; Pearson, Kenneth William; and Woolley, John Mathers, 3,737,445.
Peat, Derek: *See—*
Farrar, Trevor Alfred; Hodson, David George; and Peat, Derek, 3,736,895.
Peddinghaus, Paul Ferd., Firma: *See—*
Overkott, Franz Josef, 3,737,609.
Pedi, Mario J. Slicer having automatic materials feed. 3,736,829, Cl. 83-788.000.
Pencyla, Giedrius, to Kory Industries, Inc., mesne. Shooting range bullet trap structure. 3,737,165, Cl. 273-102.400.
Penetred Corporation: *See—*
Felker, Paul J., 3,736,784.
Pengo Corporation: *See—*
Sturgeon, Walter L., 3,736,676.
Winters, Arthur R., 3,736,996.
Pennink, Hans: *See—*
Pilarczyk, Karol; and Pennink, Hans, 3,737,252.
Pennsylvania Pacific Corporation: *See—*
Freund, James R., 3,736,885.
Pepe, Frank W. Tool for removing concentric knockouts. 3,736,643, Cl. 29-267.000.
Persky, George: *See—*
Bartelink, Dirk Jan; and Persky, George, 3,737,741.
Petersen, Donald Edwin, to Union Carbide Corporation. Cooling device. 3,736,769, Cl. 62-530.000.
Peterson, Clifford D., to Cooper Manufacturing Company, Inc. Safety interlock system. 3,736,729, Cl. 56-10.000.
Peterson, Dennis C.: *See—*
Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., 3,737,863.
Peterson, Robert A.; and Stroot, Donald H., to Caterpillar Tractor Company. Bucket arrangement. 3,737,059, Cl. 214-145.000.
Peterson, Wallace. Animal tail holder. 3,736,906, Cl. 119-105.000.
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, to Semperit Aktiengesellschaft. Pneumatic tire and method for the manufacture thereof. 3,736,972, Cl. 152-354.000.
Pettit, Charles A. Storable elevating platform. 3,737,055, Cl. 214-77.00p.
Peytavin, Pierre; and Babel, Louis, to Societe Civile d'Etudes de Centrifugation. Mold for continuous centrifugal casting. 3,736,980, Cl. 164-283.000.
Pfaffmann, George D.; and Hammond, Michael R., to Park-Ohio Industries, Inc. Apparatus for inductively heating valve seats. 3,737,612, Cl. 219-10.790.
Philadelphia, Handle Company, Inc.: *See—*
Szabo, Marton T., 3,736,621.
Philips Petroleum Company: *See—*
Kelly, Dale E.; and Gerdes, Charles W., Jr., 3,737,482.
Phillips, Henry A.; and Minnich, Reynold E. Method of and mixer block for feeding a stream of viscous material. 3,737,148, Cl. 259-4.000.
Phillips Petroleum Company: *See—*
Alleman, Carl E.; and Tuckett, William F., 3,736,725.
Cobb, Raymond L., 3,737,446.
Conner, Robert J., 3,737,273.
Cottle, John E., 3,737,470.
Dunn, Howard E., 3,737,474.
Hsieh, Henry L., 3,737,419.
Kenton, Joseph R., 3,737,415.
Ripley, Dennis L., 3,737,473.
Scoggins, Lacey E., 3,737,411.
Wood, Harold V.; and Brown, Terry D., 3,737,484.
Phillips, Ronald Frank: *See—*
Ruckel, Erwin Richard; Phillips, Ronald Frank; and Arlt, Herbert George, Jr., 3,737,418.
Piacente, Anthony N.: *See—*
Coffin, Robert E.; and Piacente, Anthony N., 3,737,274.
Piasek, Edmund J.: *See—*
Karll, Robert E.; and Piasek, Edmund J., 3,737,465.
Pic-A-Tent-Top Carrier, Inc.: *See—*
Lund, Kerry G., 3,737,083.
Picker Corporation: *See—*
Gager, Robert M., 3,737,699.
Pickles, Joseph, to Ferro Manufacturing Corporation. Window regulator. 3,736,702, Cl. 49-362.000.
Pierce, Reginald Roy, to Burndept Electronics (E.R.) Limited. Radio transmitters. 3,737,782, Cl. 325-363.000.
Pierce, Richard L.; and Stafford, Herbert E., to Zenith Radio Corporation. Hinging mechanism for a hinged chassis arrangement. 3,737,206, Cl. 312-7.0tv.
Pilarczyk, Karol; and Pennink, Hans, to Carrier Corporation. Method of and apparatus for controlling the operation of gas compression apparatus. 3,737,252, Cl. 417-53.000.
Pilpel, Walter; Torell, Spencer P.; and Spaeth, Charles E., to United States of America, Navy. Fiber blade attachment. 3,737,250, Cl. 416-219.000.
Pindell, Stuart M., Jr., to Novox, Inc. Electromagnetic timing mechanism. 3,736,740, Cl. 58-23.00d.
Pistel, Conrad: *See—*
De Neefe, John H.; Pistel, Conrad; and Schwarzbeck, John G., 3,737,022.
Pittsburgh Forests, Inc.: *See—*
Wood, Warren A.; and Fechner, John T., 3,736,967.
Pittsfield Products, Inc.: *See—*
Fosdick, Dale P., 3,736,641.
Plampton, Stanley Norman: *See—*
Tusa, John; Lawrence, Leslie Charles; and Plampton, Stanley Norman, 3,736,613.
Piana, Roberto, to AMP Incorporated. Two part housing for an electrical lamp assembly. 3,737,656, Cl. 240-151.000.
Plastronics Corporation: *See—*
Bird, Stanford W., 3,737,068.
Plempel, Manfred: *See—*
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, 3,737,531.
Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 3,737,548.
Plontke, Erich, to Kohren-Keller A.G. Pressing tool for fabricating welded branched pipe connections from weldable thermoplastic materials. 3,737,362, Cl. 156-580.000.
Plotnikoff, Nocholas Peter, to Abbott Laboratories. Method of treating depression. 3,737,549, Cl. 424-274.000.
Polaroid Corporation: *See—*
Cook, Gerald H.; and Downey, Rogers B., 3,737,218.
Polese, James P., to Varian Associates. Electron tube having an improved filamentary cathode and support therefor and method of making same. 3,737,711, Cl. 313-277.000.
Pollard, Ernest M., to General Electric Company. Static switch including surge suppressing means. 3,737,759, Cl. 321-45.00c.
Pomeroy, Frederick A.: *See—*
Rosecrants, William J.; and Pomeroy, Frederick A., 3,737,313.
Pomey, Jacques, to Societe des Aciers Fins de l'Est. Method of treatment of liquid steel under vacuum. 3,737,302, Cl. 75-10.000.
Pond, Charles W., to Hughes Aircraft Company. Crystal filter circuit with sharply defined passband wedge. 3,737,814, Cl. 333-72.000.
Pontello, Anthony P., to United States of America, Navy. Apparatus for non-destructively testing fuel filters. 3,736,790, Cl. 73-37.000.
Popendiker, Kurt: *See—*
Mohler, Werner; Reiser, Mario; and Popendiker, Kurt, 3,737,433.
Poretti, Isidoro; and Monti, Giancarlo, to Societa Italiana Telecommunicazioni Siemens S.p.A. Encoder for high-speed PCM system. 3,737,894, Cl. 340-347.0ad.
Porter, David; Campbell, William Shore; and Duck, Edward William, to International Synthetic Rubber Company Limited, The. Process for producing moulded foams from rubber-latices by using microwave heating. 3,737,488, Cl. 264-26.000.
Potain Poclain Materiel: *See—*
Cheze, Bernard J., 3,737,888.
Potter, Robert H.; and Ladewski, Bernard F., to Auto Specialties Manufacturing Company. Jack and method of making the same. 3,737,146, Cl. 254-108.000.
Poulsen, Stephen D., to Sun-Maid Raisin Growers of California. Apparatus and method for monitoring and recording fumigant concentrations in chamber fumigation. 3,736,792, Cl. 73-27.00r.
Powell, William D. Garment case with hanger-like support. 3,737,013, Cl. 190-43.000.
Powerlite Devices Limited: *See—*
Hawley, William L., 3,737,654.
Poza, Fausto, to Stanford Research Institute. Speaker authentication utilizing a plurality of words as a speech sample input. 3,737,580, Cl. 179-1.0sb.
PPG Industries, Inc.: *See—*
Doran, Thomas J.; Wagner, Melvin P.; and Stevens, Henry C., 3,737,334.
Frank, Robert G., 3,737,297.
Pratt, Eugene L. Lock. 3,736,779, Cl. 70-276.000.
Presto Lock Co., division of Kidde, Walter, & Company, Inc.: *See—*
Bako, Lazlo, 3,736,778.
Prince, George M.: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.
Process Evaluation and Development Corporation: *See—*
Vielavicencio, Eduardo J., 3,737,369.
Procter & Gamble Company, The: *See—*
Francis, Marion D., 3,737,522.
Production, Inc.: *See—*
Schmidt, Gunter, 3,737,363.
Production Technology Inc.: *See—*
Kiwalle, Jozef, 3,737,157.
Produits Chimiques Pechiney Saint-Gobain: *See—*
Charavel, Bernard, 3,737,441.
Progressive Products Corporation: *See—*
Eilenberger, Stanley D., 3,737,624.
Pryor, Harry T. Angularly controlled extension for house painter's brush. 3,737,187, Cl. 294-19.00r.
Puccini, Sergio E., to GTE Automatic Electric Laboratories Incorporated. Data processor with cyclic sequential access to multiplexed logic and memory. 3,737,873, Cl. 340-172.500.
Pullman Incorporated: *See—*
Yang, Tung H.; and Branson, Theodore A., 3,736,883.
Pulsepower Systems, Inc.: *See—*
Broxholm, Thomas M., 3,736,687.
Purtell, Rufus J. Mushroom-shaped drain valve and method of using the same. 3,736,951, Cl. 137-217.000.

Putzier, Friedrich, to Battenfeld Maschinenfabriken G.m.b.H. Mould closing means. 3,737,278, Cl. 425-450.000.
Quaker Oats Company, The: *See—*
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,737,430.
Quanstrom, Jack L.: *See—*
Belet, Joseph J.; and Quanstrom, Jack L., 3,737,893.
Quarch, Rolf: *See—*
Geiss, Richard; and Quarch, Rolf, 3,737,386.
Quibel, Jacques: *See—*
Lhonore, Pierre; Quibel, Jacques; and Senes, Mikheh, 3,737,291.
Quichaud, Claude: *See—*
Le Peuvedic, Jean-Pierre; and Quichaud, Claude, 3,737,843.
Quittner, George F. Radiation path termination housing. 3,737,663, Cl. 250-83.30h.
Rabenhorst, David W., to Johns Hopkins University, The. Fanned circular filament rotor. 3,737,694, Cl. 310-74.000.
Rachmann, Johannes: *See—*
Fussgaenger, Kurt; Rachmann, Johannes; and Mettler, Klaus, 3,737,828.
Rademacher, Albert, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Harness connector for jacquard machines. 3,736,962, Cl. 139-85.000.
Radiation Incorporated: *See—*
Bartlett, Homer E.; and Sheppard, Emory L., 3,737,909.
Radiation Systems Incorporated: *See—*
Shelton, John Paul, 3,737,810.
Radnofsky, Matthew I.; Barnett, James H., Jr.; Harrison, Floyd L.; and Marak, Ralph J., to United States of America, National Aeronautics and Space Administration. Life raft stabilizer. 3,736,607, Cl. 9-2.00a.
Raff, Lothar, to Bosch, Robert, G.m.b.H. Control circuit for controlling a fuel injecting system. 3,736,910, Cl. 123-32.0ea.
Rahn, Ralph A., to General Motors Corporation. Horizontally omnidirectional electromagnetic sensor. 3,737,692, Cl. 310-15.000.
Rainsard, Yves: *See—*
Oswald, Jacques; and Rainsard, Yves, 3,737,783.
Ramsey, Samuel Terry. Tool for treating or cleaning wire rope. 3,736,618, Cl. 15-306.00a.
Randall, Douglas Raymond: *See—*
Olive-Jones, Michael William; and Randall, Douglas Raymond, 3,736,788.
Randol, Kent B.; and Redford, Robert L., to International Harvester Company. Flexible plastic trash plate for a moldboard plow. 3,736,989, Cl. 172-75.00g.
Randomatic Data Systems, Inc.: *See—*
Cross, Laurence Allan, Jr., 3,737,898.
Ranken, William A.: *See—*
Weaver, Cliff V.; Ranken, William A.; and Lawton, Robert G., 3,736,658.
Raposa, Frank L.: *See—*
Fowler, John T.; and Raposa, Frank L., 3,737,757.
Rasenberger, Rudolf. Track assembly for converting wheeled vehicles. 3,737,001, Cl. 180-5.00a.
Raum, John F.; and Tillman, Henry R., to Western Electric Company, Incorporated. Twisted pair untwisting and stripping tool. 3,736,606, Cl. 7-14.10r.
Rausing, Anders Ruben, to Sobrefina SA. Packaging container having a container body of thermoplastic material and a metal foil lining inserted into the container body. 3,737,092, Cl. 229-14.00b.
Rawley, Joseph P.: *See—*
Smith, Joe M., 3,737,365.
Ray, Harold T.: *See—*
Heller, Kenneth G.; Ray, Harold T.; and Martens, Douglas A., 3,737,145.
Raymond International Inc.: *See—*
Hartzell, Carl D.; and Schwarzer, Thomas P., 3,736,757.
Raytheon Company: *See—*
Edson, David D., 3,737,841.
Georgopoulos, Christos J., 3,737,899.
RCA Corporation: *See—*
Ahmed, Adel Abdel Azia, 3,737,682.
Amemiya, Hiroshi, 3,737,797.
Kudman, Irwin; and Schmelz, Carl Michael, 3,737,345.
Lindburg, Norman Lee; Bonnette, Richard Arthur; and Deegan, Thomas Edward, 3,737,706.
Silver, Robert Steven, 3,737,715.
Recognition Equipment Incorporated: *See—*
Monday, William C., 3,737,160.
Rectenwald, Charles E.: *See—*
Clark, Jared W.; and Rectenwald, Charles E., 3,737,388.
Clark, Jared W.; and Rectenwald, Charles E., 3,737,389.
Clark, Jared W.; and Rectenwald, Charles E., 3,737,390.
Red Devil Incorporated: *See—*
Seip, Donald P., 3,736,616.
Redford, Robert L.: *See—*
Randol, Kent B.; and Redford, Robert L., 3,736,989.
Redlich, Horst; and Klemp, Hans-Joachim, to Teldec Telefunken-Decca Schallplatten G.m.b.H. Recording mechanically reproducible high frequency signals on recording carriers. 3,737,589, Cl. 179-100.30a.
Reed, Elmer E., Jr.: *See—*
Basiulis, Algerd; and Reed, Elmer E., Jr., 3,736,936.
Reed, Sumner C. Security seal. 3,737,185, Cl. 292-308.000.
Rees, Clive. Method of molding with flash removal by mold rotation. 3,737,502, Cl. 264-161.000.
Regie Nationale des Usines Renault: *See—*
Maurice, Jean; and Mouttet, Andre, 3,737,205.
Mercier, Jacques, 3,736,858.
Reich, Zygmund, to Instrument Systems Corporation. Control system having column timers at each end. 3,737,862, Cl. 340-163.00r.
Reid, Sidney G., to Ontario Research Foundation. Methods for transplanting plants and trees. 3,736,889, Cl. 111-1.000.
Reidl, Georg. Pump. 3,737,110, Cl. 241-43.000.
Reimels, Harry G., to Couman & Shurtleff, Inc. Surgical sponge. 3,736,935, Cl. 128-296.000.
Reinartz, Hans-Dieter, to ITT Industries, Inc. Adjusting device for brake linings of friction brakes. 3,737,011, Cl. 188-196.0ba.
Reiner, Joser Rudolf; and Schramm, Gunther Paul Theodore, to Firma Wernicke & Co., K.G. Devices for centering spectacle lenses. 3,737,238, Cl. 356-172.000.
Reis, Robert D., to United Electric Controls Company. Control instrument. 3,736,808, Cl. 74-469.000.
Reiser, Mario: *See—*
Mohler, Werner; Reiser, Mario; and Popendiker, Kurt, 3,737,433.
Reitter, Gunther; and Riegler, Ernst, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Tilting drive for converters. 3,736,807, Cl. 74-410.000.
Rempes, Paul E., Jr.; and Houghton, Le Roy H., to Champion Spark Plug Company. Ignition noise suppression center electrode assembly for spark plugs. 3,737,718, Cl. 315-58.000.
Renis, Harold E.: *See—*
Nook, Mary A.; Renis, Harold E.; and Underwood, Gerald E., 3,737,550.
Renner, Ulrich: *See—*
Jneggi, Knut A.; and Renner, Ulrich, 3,737,539.
Repetto, Silvio, to Rizzi, Luigi, & Co., S.p.A. Skin splitting machine. 3,736,776, Cl. 69-13.000.
Republic Steel Corporation: *See—*
Fitzhugh, Edward F., Jr.; Bush, Philip D.; and Seidel, Don C., 3,737,307.
Research Corporation: *See—*
Cheng, Sin-I, 3,737,119.
Stephenson, Kermit Quinten, 3,736,882.
Reth, Erich; and Uthmann, Walter, to Demag Aktiengesellschaft. Device for transferring groups of rods from a rake-type cooling bed to a series of rollers for charging a cooling bed cold shears. 3,737,021, Cl. 198-20.00r.
Reutter, Werner: *See—*
Keppler, Dietrich; Lesch, Rainer; Reutter, Werner; and Decker, Karl, 3,737,525.
Reynolds Metals Company: *See—*
Wagner, Nicholas A., 3,736,786.
Richardson Company, The: *See—*
Alsberg, Henry; and Frederiksen, Ronald A., 3,737,339.
Richardson-Merrell Inc.: *See—*
Frey, Robert R., 3,737,322.
Riches, George Henry Wiseman. Convertible sofa. 3,736,601, Cl. 5-9.00r.
Richmond, Thomas C.; and Bertsch, Peter K., to U.S. Philips Corporation. Cryogenic refrigerator. 3,736,761, Cl. 62-6.000.
Richter, Eike; and Brissey, George E., to General Electric Company. High speed homopolar inductor generator with straight winding construction. 3,737,696, Cl. 310-168.000.
Ricklefs, Merlin J.: *See—*
Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., 3,737,097.
Riegler, Ernst: *See—*
Reitter, Gunther; and Riegler, Ernst, 3,736,807.
Riester, James J.: *See—*
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
Rieter Machine Works, Ltd.: *See—*
Alt, Hans Rudolf; Just, Christian; and Wildbolz, Rudolf, 3,736,624.
Rietz, Earl B.; McCloud, James R.; Koenn, Hubert J.; and Wall, David A., to I-T-E Imperial Corporation. Resistor assembly with compression plate supports. 3,737,831, Cl. 338-261.000.
Rife, Robert E.: *See—*
Babb, Burton A.; Byer, Edward L.; Giffin, George S.; and Rife, Robert E., 3,737,667.
Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., to Squibb, E. R., & Sons, Inc. Alpha-aminobenzyl penicillins. 3,737,545, Cl. 424-271.000.
Rifino, Carl B.: *See—*
Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,737,545.
Rigterink, Raymond H., to Dow Chemical Company, The. Substituted S-(4-oxo-1,2,3-benzotriazin-3(4H)-yl) methyl)phosphorothioates and phosphorodithioates for controlling arthopods. 3,737,527, Cl. 424-200.000.
Rinehart, James W.: *See—*
Marshall, Arthur N.; Rinehart, James W.; and Gregory, Charles A., Jr., 3,737,851.
Ripley, Dennis L., to Phillips Petroleum Company. Two-stage dehydrogenation process. 3,737,473, Cl. 260-680.00e.
Rival Manufacturing Company: *See—*
McLean, Robert E., 3,736,659.

Rizzi, Luigi, & Co., S.p.A.: *See—*
Repetto, Silvio, 3,736,776.

Rizzo, Victor L.: *See—*
Moon, Malcolm W.; and Rizzo, Victor L., 3,737,533.

Robbins Company, The: *See—*
West, Harold H., 3,736,993.

Roberts, Henry J.; Thurston, James R.; and Dinsdale, Vern Thomas, to United States of America, Air Force. Ignition system for a parachute flare. 3,736,877, Cl. 102-35.000.

Roberts, John A.; and Roberts, Peter R., to Brunswick Corporation. Passage structure. 3,737,367, Cl. 161-109.000.

Roberts, Peter R.: *See—*
Roberts, John A.; and Roberts, Peter R., 3,737,367.

Robertson, Raymond A.: *See—*
Lehrer, Stanley; Robertson, Raymond A.; and Holme, John C., 3,737,856.

Robillard, Edward G.; and Lizotte, Robert H., to Cincinnati Milacron Heald Corporation. Grinding machine. 3,736,704, Cl. 51-165.780.

Robinson, David Peter: *See—*
Dolby, Ray Milton; and Robinson, David Peter, 3,737,678.

Robinson, Thomas E., to International Business Machines Corporation. Pattern recognition systems using associative memories. 3,737,852, Cl. 340-146.30q.

Robison, Ernest B.: *See—*
Ehrlich, Shelton; Bishop, John W.; and Robison, Ernest B., 3,736,908.

Rodriguez, Rodolfo, to Miles Laboratories, Inc. Composition for suppressing the tremor of Parkinson's syndrome. 3,737,540, Cl. 424-250.000.

Roe, Harry L., Jr.: *See—*
Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,736,653.

Roeder, Georg; and Schmidt, Claus, to Messer Griesheim G.m.b.H. Method for maintaining constant the distance of a cutting or welding torch from the work piece. 3,736,647, Cl. 29-470.000.

Rogers, J. O., Jr. Telescoping row marker. 3,736,990, Cl. 172-131.000.

Rohr Corporation: *See—*
Tontini, Remo, 3,737,005.

Rohr Industries, Inc.: *See—*
Ross, James A., 3,736,880.

Rohre, Rudolf: *See—*
Jeger, Hans; and Rohre, Rudolf, 3,736,660.

Rolinson, George Newbolt: *See—*
Cole, Martin; and Rolinson, George Newbolt, 3,737,523.

Rollor, Edward A., Jr.: *See—*
Turner, Loyce A.; and Rollor, Edward A., Jr., 3,737,858.

Rolls-Royce Limited: *See—*
Britt, Jack, 3,736,750.

Romer, Hugh Frank; and Beazley, Rodney Thomas, to Glacier Metal Company Limited, The. Method of making a ball and socket joint. 3,736,635, Cl. 29-149.50b.

Romero, Roderic, to Bell Telephone Laboratories, Incorporated. Telephone switching system having call pickup service. 3,737,587, Cl. 179-18.00b.

Roncalli, Raffaele Amici: *See—*
Messersmith, Robert Earl; and Roncalli, Raffaele Amici, 3,737,546.

Rood, Alvin A.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin A., 3,737,107.

Rooklyn, Jack, to Mirra-Cote Co., Inc. Dispensing apparatus for rolled materials. 3,737,087, Cl. 226-110.000.

Rooney, Clarence S.: *See—*
Carlson, John A.; Hoff, Dale R.; and Rooney, Clarence S., 3,737,547.

Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, to Bayer Aktiengesellschaft. N-[2-Formylpropylthio(2)]-imides. 3,737,438, Cl. 260-326.00s.

Rosales, Joseph G., to Ackley, Donald M. Redundant bearing. 3,737,202, Cl. 308-183.000.

Rosecrants, William J.; and Pomeroy, Frederick A., to Eastman Kodak Company. Paper radiographic element containing silver halide grains rhodium salt sensitized, thiolther ripened and polyvalent metal ion stabilized. 3,737,313, Cl. 96-27.00r.

Roselli, Frank A., to Xerox Corporation. Rotational drive mechanism. 3,737,221, Cl. 355-3.000.

Rosemount Engineering Company, Limited: *See—*
Johnston, James Stewart, 3,737,590.

Rosenberg, Allan Yngve Teodor: *See—*
Oldenburg, Jerx Gunnar; and Rosenberg, Allan Yngve Teodor, 3,737,664.

Rosenberg, Harry, to New Jersey Machine Corporation. Packaging machine. 3,736,722, Cl. 53-124.00e.

Rosenblad Corporation: *See—*
Fabri, Ernest S., 3,736,783.

Rosenburgh, Norman J.: *See—*
Harter, James E.; and Rosenburgh, Norman J., 3,737,227.

Rosenthal, Rudolph: *See—*
Bonetti, Giovanni A.; Rosenthal, Rudolph; Kieras, Joseph A.; and Wise, William B., 3,737,518.

Rositano, Salvadore A.: *See—*
Haines, Richard F.; Fitzgerald, James W.; and Rositano, Salvadore A., 3,737,217.

Rosmanith, Carl William, to Beckman Instruments, Inc. Slide selector switch with multiple indenpendently removable slide assembly modules. 3,737,594, Cl. 200-16.00r.

Ross, James A., to Rohr Industries, Inc. Feedback control circuit for magnetic suspension and propulsion system. 3,736,880, Cl. 104-148.0ms.

Ross, Sydney: *See—*
Sennett, Paul S.; Olivier, James P.; and Ross, Sydney, 3,737,332.

Rossi, Guido; and Keiser, Markus, to Micafil A.G. Machine for winding high-voltage electrical bushings. 3,737,116, Cl. 242-56.100.

Rostad, Nels C., to Lockheed Aircraft Corporation. Four-way solenoid selector valve. 3,736,958, Cl. 137-625.600.

Roth, Carl, ohg: *See—*
Keppler, Dietrich; Lesch, Rainer; Reutter, Werner; and Decker, Karl, 3,737,525.

Roth, Irving, to Slattery Associates, Inc. Adjustable slab form support for bridge decking or the like. 3,737,132, Cl. 248-228.000.

Roth, Wolfgang, to Deere & Company. Hydraulic drive. 3,736,753, Cl. 60-53.00r.

Rothermel, Dieter, to Bosch, Robert, G.m.b.H. Circuit for generating pulses. 3,737,681, Cl. 307-246.000.

Rothman, Lillian. Child's plush figure headboard. 3,736,603, Cl. 5-317.00r.

Rowland, Richard C.; Mahood, James A.; Jessee, Norman P.; Geer, Robert W.; and Peterson, Dennis C., to Bio-Logics, Inc. Medical testing system. 3,737,863, Cl. 340-172.500.

Royet, Jean: *See—*
Aupoix, Marcel; Franckhauser, Francois Moisson; and Royet, Jean, 3,736,656.

Roze, Albert: *See—*
Fencl, Vernon R.; and Roze, Albert, 3,736,787.

Ruckel, Erwin Richard; Phillips, Ronald Frank; and Arlt, Herbert George, Jr., to Arizona Chemical Company, mesne. Dipentene/beta-pinene copolymers. 3,737,418, Cl. 260-88-200.

Rucker Company, The: *See—*
Vujasinovic, Ado N., 3,736,982.

Rudolph, Werner: *See—*
Pauckach, Heinrich; Rudolph, Werner; and Massonne, Joachim, 3,737,471.

Rudy, Erwin, to Aerojet-General Corporation. Carbide alloy. 3,737,289, Cl. 29-182.700.

Ruleff, Robert L.; Lee, William P., II; and Childress, Jay W., to National Cash Register Company, The. Manufacture of printing elements by a photoresist chemical etching system. 3,737,314, Cl. 96-36.300.

Rundblad, Nils, O. W.: *See—*
Andersson, Erik Arne; and Andersson, Bror Axwl Erling, 3,736,928.

Rusch, William T.: *See—*
Baer, Ralph H.; and Rusch, William T., 3,737,566.

Rusco Industries, Inc.: *See—*
Miller, Richard A., 3,736,602.

Rush, C. J., Limited: *See—*
Rush, Carl Jackson; and Appelmann, Horst, 3,736,701.

Rush, Carl Jackson; and Appelmann, Horst, to Rush, C. J., Limited. Revolving door. 3,736,701, Cl. 49-44.000.

Russell, Donald C.: *See—*
Beery, Jack; and Russell, Donald C., 3,737,158.

Russell, Ronald W.; and Solomon, James E., to Motorola, Inc. High voltage operational amplifier. 3,737,800, Cl. 330-207.00p.

Rutenberg, Morton W.: *See—*
Jarowenko, Wadym; and Rutenberg, Morton W., 3,737,370.

Ruth, John E. Storage system for single guide means. 3,737,047, Cl. 211-162.000.

Ryan, Merle E.; and Stremel, William D., to Bendix Corporation, The. Thrust bearing arrangement for a deadshaft mounted grinder wheelhead. 3,736,705, Cl. 51-168.000.

Ryder, Francis E., to Value Engineered Components, Inc. Molding apparatus. 3,737,268, Cl. 425-192.000.

Rythm Watch Company, Limited: *See—*
Kudoh, Tetsuo; and Koide, Hideo, 3,737,598.

Sachsenwerk Licht- und Kraft-Aktiengesellschaft: *See—*
Claus, Hartmut, 3,737,403.

Safar, Frank, to Smith International, Inc. Removable bearing assembly for tunneling machine. 3,736,771, Cl. 64-23.500.

Safelink AB: *See—*
Flinth, Rune Nils Allan; and Nordstrom, Kjell Helge, 3,736,998.

Sagner, Gerhard; and Dehner, Otto, to Farbenfabriken Bayer Aktiengesellschaft. Anaesthetic compositions for and use in animals. 3,737,536, Cl. 424-246.000.

Sahagian, Edward H. Safety apparatus for automobiles. 3,737,175, Cl. 280-150.00b.

Saint-Pastou, Joseph. Cigarette with ash-retaining means. 3,736,940, Cl. 131-4.00a.

Saio, Takashi: *See—*
Mabuchi, Osamo; Toshima, Yoshitaka; and Saio, Takashi, 3,736,742.

Saito, Mitsutaka: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,737,483.

Sakakibara, Ryuji: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuji; and Fujii, Setsuro, 3,737,443.

Sakamoto, Kazuo; and Tamura, Ryoji, to Nippon Electric Company, Limited. Injection;type frequency-locked amplifier. 3,737,804, Cl. 331-107.00r.
Sakuragi, Johji; and Kameda, Kazuhiko, to Tokyo Shibaura Electric Co., Ltd. Object identification system. 3,737,911, Cl. 343-6.5ss.
Sakurai, Hiroshi: *See—*
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, 3,737,373.
Salava, Roger F., to Motorola, Inc. Character to dot generator. 3,737,890, Cl. 340-347.9dd.
Salge, Jurgen; and Hartel, Hagen, to Kind, Dieter. Current limiting interruption of currents at high voltages. 3,737,724, Cl. 317-11.00a.
Salmanova, Ljudmila Sergeevna: *See—*
Zinchenko, Vasily Ivanovich; Salmanova, Ljudmila Sergeevna; and Minchuk, Filipp Leontievich, 3,737,324.
Salminen, Ilmari Fritiof; and Loria, Anthony, to Eastman Kodak Company. Two-equivalent sulfonamido couplers. 3,737,316, Cl. 96-56.600.
Salter, Albert H. Diamond-impregnated masonry bit with radially-stepped cutting faces. 3,736,995, Cl. 175-330.000.
Sanders Associates, Inc.: *See—*
Baer, Ralph H.; and Rusch, William T., 3,737,566.
Sanders Nuclear Corporation: *See—*
Harvey, Douglas G., 3,737,620.
Sanders, Wayne W.: *See—*
Vaillancour, Thomas L.; and Sanders, Wayne W., 3,737,708.
Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Jucker, Ernst; Ebnother, Anton; and Bastin, Jean-Michel, 3,737,544.
Sandoz-Wander, Inc.: *See—*
Kathawala, Faizulla G., 3,737,451.
Sangster, Frederik Leonard Johan, to U.S. Philips Corporation. Bucket bridge delay line with error compensation. 3,737,683, Cl. 307-293.000.
Sankyo Company Limited: *See—*
Mukaiyama, Teruaki; Ueki, Masaaki; Matsueda, Rei; and Maruyama, Hiroshi, 3,737,423.
Sarem, Amir M., to Union Oil Company of California. Method for extruding gelatinous material. 3,737,500, Cl. 264-142.000.
Sarns, Inc.: *See—*
De Vries, James H., 3,737,256.
De Vries, James H., 3,737,257.
Teders, Phillip J., 3,737,748.
Vaalburg, Thomas T., 3,736,953.
Sasagawa, Teigi: *See—*
Ashida, Takashi; Sasagawa, Teigi; Fukabori, Masaru; Karino, Shinobu; and Motoki, Sadao, 3,737,817.
Sasaki, Yasuichi: *See—*
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, 3,737,373.
Sasaki, Yasuo: *See—*
Maeda, Kazuo; and Sasaki, Yasuo, 3,737,340.
Satchell, Fred E., to Sherwood Medical Industries, Inc. Injection apparatus with filter. 3,736,932, Cl. 128-218.00r.
Sato, Hiroshi: *See—*
Kiwaki, Hisakatsu; Sato, Hiroshi; and Kuwabara, Takeo, 3,737,760.
Sato, Takefumi: *See—*
Okamoto, Toshiaki; Kuwana, Kazutaka; and Sato, Takefumi, 3,737,201.
Saucier, David O., to Compo-Tek Corporation. Laminated water ski. 3,736,609, Cl. 9-310.00a.
Sawagata, Shinichi: *See—*
Tsuneta, Asahide; and Sawagata, Shinichi, 3,737,703.
Sawyer, Edgar W., Jr., to Engelhard Minerals & Chemicals Corporation. Method for processing kaolin clay. 3,737,333, Cl. 106-288.00b.
Schaeffer, Gerard; Trub, Jean; and Bouvet, Jean, to Battelle Memorial Institute. Injection press. 3,737,151, Cl. 259-191.000.
Schafer, Karl; and Hohne, Arthur, to Ferma Entwicklungswerk fur rationelle Fertigbaumethoden und Maschinenanlagen GmbH & Company, K.G. Apparatus for continuous forming of gypsum bodies, in particular plates. 3,737,265, Cl. 425-140.000.
Schaffer, Walter S.: *See—*
Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., 3,737,097.
Schaltbau Gesellschaft mbH: *See—*
Dietrich, Bernhard; and Huber, Erich, 3,737,604.
Scharlack, Meyer J. Method and apparatus for forming spatial light patterns. 3,737,722, Cl. 315-209.000.
Schaumburg, Edward G.: *See—*
Miller, James H.; and Schaumburg, Edward G., 3,736,642.
Schempp, Eberhard G.: *See—*
Steffora, Theodore J.; and Schempp, Eberhard G., 3,737,153.
Scheuermann, Horst: *See—*
Eilingsfeld, Heinz; and Scheuermann, Horst, 3,737,449.
Schiess Aktiengesellschaft: *See—*
Wagner, Hans O., 3,737,008.
Schlesser, Adolph. Irrigation conduit stream divider. 3,736,955, Cl. 137-561.000.
Schliersee, Neuhaus Bei: *See—*
Becker, Herrmann; and Schliersee, Neuhaus Bei, 3,737,171.
Schlgel, William R., to All American Industries, Inc. Variable energy absorber for aircraft arresting system. 3,737,124, Cl. 244-110.00a.
Schlumberger Instruments et Systemes: *See—*
Faraguet, Claude; and Vaillier, Roland, 3,737,798.
Schmaldienst, Peter; and Brand, Gunter, to Bosch, Robert, G.m.b.H. Electronic ignition system for an internal combustion engine. 3,736,914, Cl. 123-148.00e.
Schmelz, Carl Michael: *See—*
Kudman, Irwin; and Schmelz, Carl Michael, 3,737,345.
Schmid, Julius, Inc.: *See—*
Gordon, Harry W.; and Wasserstein, Paul B., 3,737,552.
Schmidt, Claus: *See—*
Roeder, Georg; and Schmidt, Claus, 3,736,647.
Schmidt, Gunter, to Production, Inc. Dental film stripper. 3,737,363, Cl. 156-584.000.
Schmidt, Josef, to Bell & Howell Company. Film retention means for film cartridges. 3,737,086, Cl. 226-11.000.
Schmit, Theodore F., to Electronic Flag Poles, Inc. Motor control system. 3,737,749, Cl. 318-472.000.
Schmitt, Edward E.; and Bailey, William J., to American Cyanamid Company. Polyglycolic acid in solutions. 3,737,440, Cl. 260-32.80r.
Schmitt, Edward Emil; and Epstein, Martin, to American Cyanamid Company. Method of attaching surgical needles to multifilament polyglycolic acid absorbable sutures. 3,736,646, Cl. 29-458.000.
Schneider, Hans, to Siemens Aktiengesellschaft. Contactless switching device. 3,737,829, Cl. 338-32.00r.
Schneider, Helmut, to Werner & Mertz GmbH. Device for automatically discharging an effective substance into a normally closed room. 3,737,104, Cl. 239-274.000.
Schneider, Richard C. Nozzle assembly for a hydrotherapeutic unit. 3,736,922, Cl. 128-66.000.
Schnell, Gerhard, to Bosch, Robert, G.m.b.H. Wheeled vehicle. 3,737,062, Cl. 214-670.000.
Schnell, Hermann: *See—*
Krimm, Heinrich; Lenz, Gunther; and Schnell, Hermann, 3,737,413.
Schnfider, Richard E.: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin A., 3,737,107.
Schnoring, Hildegard; Pampus, Gottfried; Schon, Leverkusen Nikolaus; and Witte, Josef, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of microgranulates. 3,737,337, Cl. 117-100.000.
Schnurrbusch, Karl: *See—*
Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, 3,737,336.
Scholn, Joel Mark: *See—*
Basseches, Harold; Gerstenberg, Dieter; Lepselter, Martin Paul; Macrae, Alfred Urquhart; and Scholn, Joel Mark, 3,737,343.
Scholten-Honig Research N.V.: *See—*
Dolfing, Thale; and Lolkema, Jan (said Lolkema assor. to), 3,736,758.
Schon, Leverkusen Nikolaus: *See—*
Schnoring, Hildegard; Pampus, Gottfried; Schon, Leverkusen Nikolaus; and Witte, Josef, 3,737,337.
Schrage, Albert: *See—*
Arnold, Melvin R.; and Schrage, Albert, 3,737,395.
Schramm, Gunther Paul Theodore: *See—*
Reiner, Joser Rudolf; and Schramm, Gunther Paul Theodore, 3,737,238.
Schrenk, Walter J.; Cleereman, Kenneth J.; Chisholm, Douglas S.; and Alfrey, Turner, Jr., to Dow Chemical Company, The. Apparatus for the formation of composite plastic bodies. 3,737,263, Cl. 425-131.000.
Schreyer, Gerd; Theissen, Ferdinand; and Weiberg, Otto, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of recovering water free hydrogen peroxide solutions. 3,737,519, Cl. 423-589.000.
Schubart, Rudiger: *See—*
Roos, Ernst; Abele, Manfred; Nast, Roland; Kempermann, Theo; and Schubart, Rudiger, 3,737,438.
Schuerholz, Donald L. Power conditioner. 3.737,689, Cl. 310-3.00r.
Schuettler, Ralph William: *See—*
Turner, Garland Linwood; Schuettler, Ralph William; and Collingwood, George Howard, 3,737,505.
Schultz, Peter C.: *See—*
Keck, Donald B.; Schultz, Peter C.; and Zimar, Frank, 3,737,292.
Schultz, Seiford F.; and Higgins , James H., to United States of America, Army. Headend suspension for a carpet roll solid propellant grain. 3,737,348, Cl. 149-2.000.
Schumacher, Ferdinand: *See—*
Weiste, Helmut; and Schumacher, Ferdinand, 3,736,845.
Schumacher, Gunter: *See—*
Schumacher, Gustav, II; and Schumacher, Gunter, 3,736,737.
Schumacher, Gustav, II; and Schumacher, Gunter. Control device for raising and lowering the cutter mechanism of harvesters. 3,736,737, Cl. 56-208.000.
Schumann, Johannes P.: *See—*
Mutschelknauss, Ralf E.; Schumann, Johannes P.; and Bergman, Manfred, 3,736,918.
Schumann, Robert W., to Grace, W. R., & Co. Apparatus and method for preparing confectionery drops. 3,737,328, Cl. 99-134.00r.
Schuplin, Jerome T., to Fastway Fasteners, Inc. Cable support clip. 3,737,128, Cl. 248-71.000.
Schussel, Edward W.: *See—*
Tellerman, Edward M.; Kashden, Richard Paul; Schussel, Edward W.; and Vossen, Robert J., 3,737,112.

Schutze, Henry G.; Williams, Herschel C.; Neureiter, Norman P.; and Bown, Delos E., to Esso Research and Engineering Company. Polyphosphorous bisphenol condensates. 3,737,486, Cl. 260-930.000.
Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung: *See*—
Gessler, Hans, 3,737,054.
Schwartz, Bernard: *See*—
Berman, Richard M.; Schwartz, Bernard; and Bethke, Lyman W., 3,737,251.
Schwartz, Nelson E.: *See*—
Beard, Franklin; and Schwartz, Nelson E., 3,736,983.
Schwarzbeck, John G.: *See*—
De Neefe, John H.; Pistel, Conrad; and Schwarzbeck, John G., 3,737,022.
Schwarzer, Thomas P.: *See*—
Hartzell, Carl D.; and Schwarzer, Thomas P., 3,736,757.
Schweizerische Aluminium AG: *See*—
Jeger, Hans; and Rohre, Rudolf, 3,736,660.
Schwuttre, Guenter H.: *See*—
Hearn, Eric W.; Schwuttre, Guenter H.; and Tekart, Erich H., 3,737,282.
Science Union et Cie, Societe Francaise de Recherche Medicale: *See*—
Corrodi, Hans Rudolf; and Fuxe, Kjell Gunnar, 3,737,541.
SCM Corporation: *See*—
Soule, Winsor Jr.; and Andreasen, Leif, 3,737,872.
Scoggins, Lacey E., to Phillips Petroleum Company. Cured poly(arylene sulfide)resins with quinones and their preparation. 3,737,411, Cl. 260-63.00r.
Scott, Ray A.: *See*—
Strang, Elmer J.; and Scott, Ray A., 3,736,975.
Scott, William V., to Sierra Research Corporation. Redundant aircraft clock synchronization. 3,737,901, Cl. 343-7.500.
Seaquist, James J., to Anderson Electric Corporation. Expansion accommodating connector for tubular bus bars. 3,737,558, Cl. 174-86.000.
Sebestyen, Laslo Gabor: *See*—
Varadi, Peter F.; and Sebestyen, Laslo Gabor, 3,736,657.
Secrest, Gerald R.: *See*—
Alcott, Graham J.; Bennett, Ian M.; and Secrest, Gerald R., 3,737,347.
See, Gary G., to Addressograph-Multigraph Corporation. Optical code reader. 3,737,629, Cl. 235-61.11e.
Segmuller A.G.: *See*—
Segmuller, Bruno, 3,737,272.
Segmuller, Bruno, to Segmuller A.G. Injection mold apparatus for the production of substantially cup-shaped and sleeve-shaped thermoplastic containers. 3,737,272, Cl. 425-248.000.
Seidel, Don C.: *See*—
Fitzhugh, Edward F., Jr.; Bush, Philip D.; and Seidel, Don C., 3,737,307.
Seip, Donald P., to Red Devil Incorporated. Adjustable pad painter. 3,736,616, Cl. 15-210.00r.
Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Yamamoto, Ken, 3,737,266.
Selco Mining Corporation, Limited, mesne: *See*—
Lazenby, Peter G.; and Wondergem, Hendrik M., 3,737,768.
Semperit Aktiengesellschaft: *See*—
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, 3,736,972.
Senes, Mikheh: *See*—
Lhonore, Pierre; Quibel, Jacques; and Senes, Mikheh, 3,737,291.
Sennett, Paul S.; Olivier, James P.; and Ross, Sydney, to Freeport Minerals Company. Closed cell clay foam and process for preparing same. 3,737,332, Cl. 106-71.000.
Serrell, John J.; Sparks, George C.; and Trowern, Howard M., Jr., to Parke, Davis & Company. Pharmacal package construction. 3,737,029, Cl. 206-56.0ab.
SESCOSEM-Societe Europeenne des Semi Conducteurs et de Microelectronique: *See*—
Croset, Michel; and Nouailles, Noel, 3,737,341.
Seyfried, Klaus: *See*—
Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, 3,737,336.
Shaffer, Patrick D., to Binks Manufacturing Company. Electrostatic spray coating apparatus. 3,737,099, Cl. 239-15.000.
Shaffer, Walter M., to Towmotor Corporation. Self-loading/unloading lift truck carriage. 3,737,060, Cl. 214-514.000.
Shank, Lawton F. Light diffusion assembly for close-up photography. 3,737,226, Cl. 355-67.000.
Shankwitz, Robert F.; and Thies, Jerome A., to Caterpillar Tractor Company. Corner construction for loader buckets or the like. 3,736,675, Cl. 37-141.000.
Shapiro, Nelson H.: *See*—
Belknap, Donald J., 3,736,630.
Sharp, John Alan; Dean, Raymond Ernest; and Fielding, Michael, to Coal Tar Research Association, The. Production of cresols. 3,737,466, Cl. 260-621.00r.
Sharp, Richard A.: *See*—
Nelson, Harold C.; and Sharp, Richard A., 3,737,010.
Sharp, William L., Jr. Apparatus and method for controlling an electrical power circuit. 3,737,685, Cl. 250-83.3uv.
Sharpe, John William, to Lucas, Joseph (Industries), Limited. Anchorage devices. 3,737,182, Cl. 287-86.000.
Sheehan, Elizabeth R., to Lee, Raymond, Organization, Inc., The. Stand for supporting guitar. 3,737,137, Cl. 248-441.000.
Shell Oil Company: *See*—
Marangoni, Elvino; and Webb, Douglass G., Jr., 3,736,909.
Mason, Ronald F., 3,737,475.
Shelton, John Paul, to Radiation Systems Incorporated. Wideband tem components. 3,737,810, Cl. 333-10.000.
Shen, Tsung-Ying; Jones, Howard; and Fordice, Michael W., to Merck & Co., Inc. Substituted 1-(loweralkyl-sulfinylbenzylidine)-3-indenyloxyacetic acid and esters thereof. 3,737,455, Cl. 260-520.000.
Shepard, Ray M.: *See*—
Knobloch, John C.; and Shepard, Ray M., 3,737,000.
Sheppard, Emory L.: *See*—
Bartlett, Homer E.; and Sheppard, Emory L., 3,737,909.
Sherwood Medical Industries, Inc.: *See*—
Satchell, Fred E., 3,736,932.
Shevlin, Thomas S., to Minnesota Mining and Manufacturing Company. Device and method for storing and cooking foodstuffs in a refrigerated environment. 3,736,981, Cl. 165-2.000.
Shibasaki, Katsutami: *See*—
Kitajima, Susumu; and Shibasaki, Katsutami, 3,737,041.
Shibata, Kazuo; and Kurita, Takashi, to Shimadzu Seisakusho Ltd. Spectrophotometer for measurement of derivative spectra. 3,737,234, Cl. 356-88.000.
Shibata, Masaji. Dry cleaning and laundry apparatus. 3,736,774, Cl. 68-18.00r.
Shibata, Ryoji. Adhesive sheet material. 3,736,685, Cl. 40-158.000.
Shim, Kyung S., to Stauffer Chemical Company. Polymeric tertiary butyl amine vulcanizing agents and method of preparation. 3,737,461, Cl. 260-583.0ee.
Shimadzu Seisakusho Ltd.: *See*—
Shibata, Kazuo; and Kurita, Takashi, 3,737,234.
Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Wide angel fisheye lens. 3,737,214, Cl. 2-9-73.
Shimoda, Keitaro; and Obama, Isamu, to American Cyanamid Company. Process for acrylic fibers of improved properties. 3,737,507, Cl. 264-182.000.
Shimodaira, Tadayoshi; and Naito, Okito, to Kabushiki Kaisha Suwa Seikosha. Crystal oscillator with stepped variable capacitor. 3,737,805, Cl. 331-116.00r.
Shinoda, Katsuro: *See*—
Takatori, Toshimitsu; Shinoda, Katsuro; and Tsuhoi, Yasuyuki, 3,737,560.
Shiraishi, Yukinobu, to Slick Tripod Co., Ltd. Hydraulically operated tripod head. 3,737,130, Cl. 248-181.000.
Shirato, Takeshi; and Ogishi, Toshiyuki, to Mitsui Shipbuilding and Engineering Co., Ltd. Control method of compressors to be operated at constant speed. 3,737,246, Cl. 415-1.000.
Shirota, Kohei: *See*—
Yanaka, Takashi; and Shirota, Kohei, 3,737,659.
Shriner, Walter. Air pollution reduction system. 3,736,727, Cl. 55-103.000.
Shue, Bruce H.: *See*—
McCoy, Donald D.; Shue, Bruce H.; and Gutmacher, Ralph G., 3,737,789.
Shute, Harry Norman. Navigation light. 3,737,651, Cl. 240-7.500.
Siddall, John B.: *See*—
Henrick, Clive A.; and Siddall, John B., 3,737,450.
Monteiro, Hugo Jorge; and Siddall, John B., 3,737,452.
Sides, Daniel H.: *See*—
Zander, Richard L.; Ostwald, Erich; and Sides, Daniel H., 3,736,992.
Siegmann, Oteried. Protective suit. 3,736,595, Cl. 2-2.000.
Siemag Siegener Maschinenbau G.m.b.H.: *See*—
Marten, Hans Friedrich, 3,736,785.
Siemens Aktiengesellschaft: *See*—
Becker, Michael, 3,737,791.
Buecherl, Erwin, 3,737,813.
Froelich, Dieter; and Welsch, Wolfgang, 3,737,876.
Fussgaenger, Kurt; Rachmann, Johannes; and Mettler, Klaus, 3,737,828.
Heywang, Walter; Winstel, Guenter; and Zschauer, Karl-Heinz, 3,737,737.
Kadow, Hermann, 3,737,859.
Schneider, Hans, 3,737,829.
Sierra Research Corporation: *See*—
Scott, William V., 3,737,901.
Sigg, Horst: *See*—
Wanner, Karl; Bleicher, Manfred; Sigg, Horst; and Burklin, Max, 3,737,170.
Silver, Robert Steven, to RCA Corporation. Bistable storage device and method of operation utilizing a storage target exhibiting electrical breakdown. 3,737,715, Cl. 315-12.000.
Simmler, Walter: *See*—
Golitz, Hans Dietrich; Noll, Walter; Schnurrbusch, Karl; Seyfried, Klaus; and Simmler, Walter, 3,737,336.
Simmons, Harold T., to McGraw-Edison Company. Push to start timer. 3,737,595, Cl. 200-33.00r.
Simmons, Russell T., to General Electric Company. Oven temperature control system and thermostatic component thereof. 3,737,826, Cl. 337-395.000.
Simon, Oscar J. Pliers. 3,736,644, Cl. 29-268.000.
Singer Company (U.K.) Limited, The, mesne: *See*—
Parsons, Ronald, 3,736,891.
Singer Company, The mesne: *See*—

Blau, Donald Z.; and Kaufman, Jesse C., 3,737,233.
Singer, M. Leonard. Device for altering lock cylinder to receive a new key. 3,736,780, Cl. 70-453.000.
Singer-General Precision, Inc.: *See—*
Solov, Edwin G.; and Papa, Bernard F., 3,737,122.
Sjoberg, Berndt Olof Harald: *See—*
Carlsson, Lars Anders Fritz; Erik, Ake John; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,737,542.
Skewis, John B.; and Lawrie, James Y. Reading machine for the blind. 3,736,672, Cl. 35-35.00a.
Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock vehicle brake systems. 3,737,200, Cl. 303-21.00f.
Slattery Associates, Inc.: *See—*
Roth, Irving, 3,737,132.
Slavic, Fred M. Press for web printing having intermittent paper feeding means. 3,737,089, Cl. 226-156.000.
Sletsjoe, Aage: *See—*
Brydoy, Sverre; and Sletsjoe, Aage, 3,737,040.
Slick Tripod Co., Ltd.: *See—*
Shiraishi, Yukinobu, 3,737,130.
Slutsky, Robert. Trailer Testing apparatus. 3,737,767, Cl. 324-51.000.
Smallwood, Donald L., to Dover Corporation. Anti-contamination vent valve. 3,736,950, Cl. 137-202.000.
Smith, Albert C., Jr.: *See—*
Baptista, John L.; and Smith, Albert C., Jr., 3,737,312.
Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. Novel process for the production of 1-chloro-3-phospholenes. 3,737,456, Cl. 260-543.00p.
Smith International, Inc.: *See—*
Safar, Frank, 3,736,771.
Smith, Joe M., 50% to Rawley, Joseph P. Method of making composite inlay designs and products. 3,737,365, Cl. 161-41.000.
Smith Kline & French Laboratories: *See—*
Whitecar, Alten E., 3,737,026.
Smith, Robert W.; Smith, William H.; and Neel, Roy E. Camper unit. 3,737,190, Cl. 296-23.00a.
Smith, Russell M.: *See—*
Chevaugeon, Rene J.; and Smith, Russell M., 3,737,745.
Smith, Thomas R., to Maytag Company, The. Oscillatable tub with flexible blade. 3,736,775, Cl. 68-23.000.
Smith, William H.: *See—*
Smith, Robert W.; Smith, William H.; and Neel, Roy E., 3,737,190.
Snelling, Christopher; Little, William S.; and Townsend, Robert H., to Xerox Corporation. Background reduction. 3,737,310, Cl. 96-1.00r.
Snelling, Christopher, to Xerox Corporation. Transmission device. 3,737,569, Cl. 178-7.100.
Snurr, Gordon R. Adjustalbe heigh support. 3,737,136, Cl. 248-412.000.
Sobrefina SA: *See—*
Rausing, Anders Ruben, 3,737,092.
Societa' Italiana Resine S.p.A.: *See—*
Vargiu, Silvio; Nistri, Ugo; and Passalenti, Beppino, 3,737,481.
Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
Poretti, Isidoro; and Monti, Giancarlo, 3,737,894.
Societe anonyme dite: L'Oreal: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; de Beaulieu, Henri Philippe; and Abegg, Jean-Louis, 3,736,944.
Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine: *See—*
Le Peuvedic, Jean-Pierre; and Quichaud, Claude, 3,737,843.
Societe Chimique de La Grande Paroisse: *See—*
Lhonore, Pierre; Quibel, Jacques; and Senes, Mikheh, 3,737,291.
Societe Civile d'Etudes de Centrifugation: *See—*
Peytavin, Pierre; and Babel, Louis, 3,736,980.
Societe de la Viscose Suisse: *See—*
Martin, Horst G.; and Feer, Ulrich P., 3,737,506.
Societe des Aciers Fins de l'Est: *See—*
Pomey, Jacques, 3,737,302.
Societe d'Optique, Precision, Electronique et Mecanique (SOPELEM): *See—*
Llop, Helenio; and Lefort, Pierre, 3,737,617.
Societe Genevoise d'Instruments de Physique: *See—*
Holmes, Peter, 3,737,669.
Sohlegel Manufacturing Company, The: *See—*
Blose, Werner, 3,736,759.
Sohn, Fred: *See—*
Mason, Howard C.; and Sohn, Fred, 3,736,968.
Solartron Electronic Group Limited, The: *See—*
Dorey, Howard Anthony, 3,737,892.
Metcalf, Eric, 3,737,891.
Solomon, James E.: *See—*
Russell, Ronald W.; and Solomon, James E., 3,737,800.
Solov, Edwin G.; and Papa, Bernard F., to Singer-General Precision, Inc. Tactical missile range control system. 3,737,122, Cl. 244-3.210.
Somerhalder, Robert Alfred, to Wean United, Inc. Roll changing device for a strip accumulator. 3,737,114, Cl. 242-79.000.
Sonnie, John R., to HiCarb Corporation. Rotary cutting tool. 3,736,634, Cl. 29-103.00a.
Sonoda, Noboru: *See—*
Tsutsumi, Shigeru; and Sonoda, Noboru, 3,737,428.
Sony Corporation: *See—*
Horigome, Sunobu, 3,737,581.
Isuchiya, Noriyuki; and Amari, Katsuioshi, 3,737,583.
Mabuchi, Osamo; Toshima, Yoshitaka; and Saio, Takashi, 3,736,742.
Yanagisawa, Yuzuru, 3,737,707.
Sordello, Frank J.; and Ha, In W., to Information Storage Systems, Inc. Linear positioning apparatus for memory disc pack drive mechanisms. 3,737,883, Cl. 340-174.10c.
Sorensen, Richard H.: *See—*
O'Hagan, Robert M.; De Spautz, Joseph F.; Carroll, James E., Jr.; and Sorensen, Richard H., 3,737,902.
Soring, Holger: *See—*
Hesebeck, Manfred; and Soring, Holger, 3,737,242.
Sosinski, Charles W., to Thomas & Betts Corporation. Connector. 3,736,627, Cl. 24-23.000.
Soule, Winsor Jr.; and Andreasen, Leif, to SCM Corporation. Plugboard selection of ordinal limits of register readout. 3,737,872, Cl. 340-172.500.
Sourby, John C.: *See—*
Kohl, Willibald F.; Sourby, John C.; and Ellinger, Rudolph H., 3,737,330.
South African Farm Implement Manufacturers Limited: *See—*
Ward, Walter H., 3,737,156.
Southard, Carl D.: *See—*
Gamblin, Rodger L.; and Southard, Carl D., 3,737,878.
Spaeth, Charles E.: *See—*
Pilpel, Walter; Torell, Spencer P.; and Spaeth, Charles E., 3,737,250.
Sparkman, Thomas W.: *See—*
Maroney, Harold W.; Hathcote, Lester R.; and Sparkman, Thomas W., 3,737,845.
Sparks, George C.: *See—*
Serrell, John J.; Sparks, George C.; and Trowern, Howard M., Jr., 3,737,029.
Sparton Corporation: *See—*
Milligan, Ronald R.; and Widenhofer, James W., 3,736,954.
Spear, Robert E.: *See—*
Blayden, Lee C.; Brondykl, Kenneth J.; and Spear, Robert E., 3,737,303.
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,304.
Blayden, Lee C.; Brondyke, Kenneth J.; and Spear, Robert E., 3,737,305.
Spencer, Lucian W., to Superior Continental Corporation. On-premise paystation adapter. 3,737,576, Cl. 179-6.30r.
Sperry Charles R.: *See—*
Gordon, William J. J.; Marden, Carleton S.; and Sperry Charles R., 3,737,241.
Spielberg, David Henry; and Levesque, Charles J., to Universal Oil Products Company. Method of bonding a zirconia member with another member. 3,736,648, Cl. 29-473.100.
Sporer, Michael, to Honeywell Information Systems, Inc. Memory bank addressing. 3,737,860, Cl. 340-172.500.
Spray nozzle: *See—*
Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin A., 3,737,107.
Squibb, E. R., & Sons, Inc.: *See—*
Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,737,545.
Srivastava, Keshava, to Honeywell Information Systems, Inc. Pulse shaping network. 3,737,808, Cl. 333-20.000.
St. Amand, Pierre: *See—*
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
Stafford, Herbert E.: *See—*
Pierce, Richard L.; and Stafford, Herbert E., 3,737,206.
Stalier, John D., to Nibco, Inc. Method for molding elbows and the like. 3,737,512, Cl. 264-297.000.
Stamicarbon N.V.: *See—*
De Vries, Menno, 3,737,393.
Stampfli, Harald, to Lucifer S.A. Electromagnet-controlling system. 3,737,736, Cl. 317-154.000.
Stana, Regis R.: *See—*
Chamberlin, Richard M.; and Stana, Regis R., 3,737,044.
Standard Oil Company (Indiana): *See—*
Karll, Robert E.; and Piasek, Edmund J., 3,737,465.
Standard Pressed Steel Co.: *See—*
Epstein, Michael M.; and Cooper, Charles W., 3,737,355.
Stander, Cornelius Marthinus; and Hughes, David Owen, to African Explosives and Chemical Industries Limited. Catalysts. 3,737,491, Cl. 264-43.000.
Stander, Cornelius Marthinus; and Hughes, David Owen, to African Explosives and Chemical Industries Limited. Method of preparing a porous catalyst-containing alkaline earth metal aluminate or titanate body. 3,737,492, Cl. 264-43.000.
Stander, Jurgen, to Krupp Fried. Gesellschaft mit beschrankter Haftung. Circuit arrangement for attenuating a broadband background noise level and interfering signals superimposed thereupon. 3,737,799, Cl. 330-126.000.
Staneff, Stefan, to Industriewerk Schaeffler, OHG. Support means for top roll carrier arm of textile drafting unit. 3,736,626, Cl. 19-295.000.
Stanford Research Institute: *See—*
Adams, David K.; and Ho, Y.-C., 3,737,801.
Poza, Fausto, 3,737,580.
State Street Bank and Trust Company, mesne: *See—*

O'Hagan, Robert M.; De Spautz, Joseph F.; Carroll, James E., Jr.; and Sorensen, Richard H., 3,737,902.

Stauffer Chemical Company: *See—*
Brokke, Mervin E.; Menn, Julius J.; and Dorman, Stephen C., 3,737,532.
Gutman, Arnold D., 3,737,528.
Gutman, Arnold D., 3,737,530.
Kohl, Willibald F.; Sourby, John C.; and Ellinger, Rudolph H., 3,737,330.
Nichols, George M., 3,737,487.
Shim, Kyung S., 3,737,461.

Stearns, Richard S.; Duling, Irl N.; and Gates, David S., to Sun Oil Company. Process of preparing ethylene-propylene copolymer oils. 3,737,477, Cl. 260-683.15d.

Steen, Heinrich J.: *See—*
Coppens, Matheus J. M.; and Steen, Heinrich J., 3,736,893.

Steffora, Theodore J.; and Schempp, Eberhard G., to Lectromelt Corporation. Molten metal holding furnace system. 3,737,153, Cl. 266-39.000.

Stein, Charles R.: *See—*
Antonson, Arvid L.; Bigelow, John E.; Stein, Charles R.; Mc Campbell, Carroll B.; and Van Horn, James W., 3,737,212.

Stein, Werner: *See—*
Hartmann, Helmut; and Stein, Werner, 3,737,444.

Steinberg, David Ronald, to Corning Glass Works. Cathode ray storage tube having target with photochromic memory device. 3,737,700, Cl. 313-65.00r.

Stellwagen, Frank W.: *See—*
Cielaszyk, Edward F.; Lundin, Robert S.; and Stellwagen, Frank W., 3,737,746.

Stendel, Wilhelm: *See—*
Enders, Edgar; and Stendel, Wilhelm, 3,737,543.

Stepanek, Frank E., to American Home Products Corporation. Venting means for cooking utensil. 3,736,917, Cl. 126-389.000.

Stephenson, Earle W., to Kennamental Inc. Earthworking tool. 3,737,199, Cl. 299-89.000.

Stephenson, Fred J., to Butler Manufacturing Company. Sub-dividing secondary support grid for a ceiling fixture. 3,736,706, Cl. 52-28.000.

Stephenson, Kermit Quinten, to Research Corporation. Transplanter using pivotal cutter chains. 3,736,882, Cl. 37-2.00r.

Sterigard Corporation: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,737,077.

Stern, Arthur M.; and Gasner, Lawrence L., 1/2 to Betz Laboratories, Inc. Treatment of pulp mill wastes. 3,737,374, Cl. 195-9.000.

Sternberg, Moshe, to Miles Laboratories, Inc. Purification of lactase. 3,737,377, Cl. 195-66.00r.

Sterner, Russell L., to Kidde, Walter, & Company, Inc., mesne. Four-section fully hydraulically operated crane boom having three individually supported single piston rams contained within fly section. 3,736,710, Cl. 52-115.000.

Stevens, Henry C.: *See—*
Doran, Thomas J.; Wagner, Melvin P.; and Stevens, Henry C., 3,737,334.

Stevesn, Keith Drummond: *See—*
Morton, John; Stevesn, Keith Drummond; and Thexton, Graham Spencer, 3,737,821.

Stewart, Charles G. Shear construction. 3,736,661, Cl. 30-192.000.

Stewart, Donald F., to Allied Chemical Corporation. Prevention of gauge bands in rolls of film. 3,737,030, Cl. 206-59.00e.

Stewart, William: *See—*
Hayden, Jack; and Stewart, William, 3,737,537.

Stjernstrom, Nils Erik: *See—*
Carlsson, Lars Anders Fritz; Erik, Ake John; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,737,542.

Stockel, Richard Frederick: *See—*
O'Brien, Samuel James; Stockel, Richard Frederick; and Herbes, William Frank, 3,737,284.

Stockinger, Walter, to Concast AG. Method of protecting butt joints of plate molds for continuous casting. 3,736,977, Cl. 164-14.000.

Stoddard, Joseph L. Wheel chair lift. 3,737,009, Cl. 187-17.000.

Stone, Hilton F., Jr., to United Aircraft Corporation. Method for bonding opposed parts of a hollow article together. 3,736,638, Cl. 29-156.800.

Stone, James M., Jr. Mole exterminator. 3,736,692, Cl. 43-77.000.

Strachan, Richard W., to Texas Instruments, Incorporated. Motor control system. 3,737,752, Cl. 318-471.000.

Straley, James M.; and Wallace, David J., to Eastman Kodak Company. Phenyl-azo-naphthal compounds. 3,737,424, Cl. 260-204.000.

Strang, Elmer J.; and Scott, Ray A., to Coats Company, Inc., The. Tire bead seating and inflating apparatus. 3,736,975, Cl. 157-1.100.

Strelchuk, William N., to Hygrade Food Products Corporation. Sausage casing and method of manufacture. 3,737,329, Cl. 99-175.000.

Strell, Hyman: *See—*
Cantwell, Joseph R.; Fagin, Samuel L.; and Strell, Hyman, 3,736,791.

Stremel, William D.: *See—*
Ryan, Merle E.; and Stremel, William D., 3,736,705.

Stricker, Alfred A.: *See—*
Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter, 3,736,651.

Strickland, Murray C.: *See—*
O'Malley, James J.; and Strickland, Murray C., 3,736,623.

Stroot, Donald H.: *See—*
Peterson, Robert A.; and Stroot, Donald H., 3,737,059.

Stumphauzer, William C.; Hogstrom, Edwin F.; Nord, Eric T.; Schnfider, Richard E.; and Rood, Alvin A., to Spray nozzle. . 3,737,107, Cl. 239-598.000.

Sturgeon, Walter L., to Pengo Corporation. Excavating tooth having outwardly slanted ribs. 3,736,676, Cl. 37-142.00r.

Sturtz, Charles R.: *See—*
Bloom, Robert A.; Sturtz, Charles R.; and McGrath, Timothy P., 3,736,801.

Such, John J.; and Olson, Arthur R., to Kendall Company, The. Nonwoven wiping cloth. 3,737,368, Cl. 161-123.000.

Suemasa, Hideo; Honda, Kazuyoshi; Yoda, Kenichi; and Hanahara, Toru, to Matsushita Electric Works, Ltd. Time delay relay. 3,737,732, Cl. 317-141.00s.

Suetake, Kunihiro; and Naito, Yoshiyuki. Extremely thin, wave absorptive wall. 3,737,903, Cl. 343-18.00a.

Suggitt, Robert M., to Texaco Inc. Production of secondary alkyl primary amines. 3,737,460, Cl. 260-583.00m.

Summe, Richard D.; and Vannoy, Everett H. Overload circuit breaker. 3,737,825, Cl. 337-91.000.

Sumrall, Dale A. Treadmill exercising machine. 3,737,163, Cl. 272-69.000.

Sun Electric Corporation: *See—*
Kunz, Miles C.; and Esvang, Robert L., 3,737,772.

Sun Oil Company: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,737,477.

Sun Studs, Inc., mesne: *See—*
Mason, Howard C.; and Sohn, Fred, 3,736,968.

Sun-Maid Raisin Growers of California: *See—*
Poulsen, Stephen D., 3,736,792.

Super Key Associates, mesne: *See—*
Harris, Joseph I., 3,737,631.

Superior Continental Corporation: *See—*
Spencer, Lucian W., 3,737,576.

Susi, A. Frederick, to GTE Sylvania Incorporated. High speed semiconductor switching circuit. 3,737,588, Cl. 179-18.0ge.

Sutryn, Caroll S.: *See—*
Dunnican, Ward G.; and Sutryn, Caroll S., 3,736,824.

Sutter, Franz, to Institut Dr. Ing. Reinhard Straumann AB. Universal sine device. 3,736,666, Cl. 33-174.0tc.

Suvela, Bernard R., to Gulton Industries, Inc. Acceleration switch with magnetic permeable metal sleeve for shunting magnetic field. 3,737,599, Cl. 200-61.45r.

Suzjki, Yasoui, to Tokyo Shibaura Electric Co., Ltd. Logic circuit using complementary type insulated gate field effect transistors. 3,737,673, Cl. 307-205.000.

Suzuki, Kenji: *See—*
Kuno, Hiroshi; Suzuki, Kenji; and Ishikawa, Mineo, 3,737,684.

Suzuki, Nobuo. Automatic shutoff system for magnetic tape reproducers and recorders. 3,737,085, Cl. 226-11.000.

Suzuki, Satomi: *See—*
Kumasaka, Sadao; Suzuki, Satomi; Yoshino, Takeo; and Kobayashi, Tutomu, 3,737,400.

Suzuki, Shogo, to Minolta Camera Kabushiki Kaisha. Apparatus for automatically firing percussion-ignitable flashlamps. 3,736,853, Cl. 95-11.50r.

Suzuki, Yuji: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,737,483.

Swanekamp, James E.; and Malloy, John H., to United States of America, Navy. Shielded balanced microwave analog multiplier. 3,737,686, Cl. 235-194.000.

Swanson, Kenneth B.: *See—*
Kish, George R.; and Swanson, Kenneth B., 3,737,603.

Swartz, Dorian J., to Hyer Hardware Mfg. Company. Push button latch mechanism. 3,737,184, Cl. 292-170.000.

Swatty, Eugene E., to Fluid Controls, Inc. Regenerative rapid stroke reciprocating hydraulic pressure converter. 3,737,254, Cl. 417-403.000.

Sweco, Inc.: *See—*
Westfall, Theodore R., 3,737,038.

Sweeny, Edward J. Scoring system for athletic events. 3,737,889, Cl. 340-323.000.

Sweeny, Keith H.; and Fischer, James R., to United States of America, Interior. Decomposition of halogenated organic compounds using metallic couples. 3,737,384, Cl. 210-59.000.

Sybron Corporation: *See—*
Willard, Roland B.; Walsh, William J.; and Larson, John I., 3,737,627.

Sylvan, Joseph. Building construction member. 3,736,718, Cl. 52-720.000.

Sylvania Electric Products, Inc.: *See—*
Biggs, Orrick Howard; Homer, Horace H.; Lougheridge, Frederick A.; and Westlund, Arnold, 3,737,653.
Theodosopoulos, James; and MacKay, Stanley, 3,737,714.

Szabo, Bela G. Burstable seamed hypodermic applicators. 3,736,933, Cl. 128-216.000.

Szabo, Marton T., to Philadelphia, Handle Company, Inc. Sheathed soft-feel handle and method of making same. 3,736,621, Cl. 16-116.000.

Szymanski, Edward R.: *See—*
Bates, Darwin S.; and Szymanski, Edward R., 3,736,867.

Taccone, Russell W., to Bangor Punta Operations, Inc. Mold forming apparatus with flask having opposed shoulder portions. 3,736,978, Cl. 164s187.000.
Taiho Pharmaceutical Company Limited: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuji; and Fujii, Setsuro, 3,737,443.
Takaki, Mareaki, to Asahi Kasei Kogyo Kabushiki Kaisha. High strength concrete. 3,737,510, Cl. 264-234.000.
Takamoto, Kunio: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka: Suzuki, Yuji; and Takamoto, Kunio, 3,737,483.
Takano, Masao: *See—*
Urabe, Hitoshi; Nagao, Kimitioshi; and Takano, Masao, 3,737,228.
Takatori, Toshimitsu; Shinoda, Katsuro; and Tsuhoi, Yasuyuki, to NGK Insulators, Ltd. Clamp-top type insulator. 3,737,560, Cl. 174-158.00r.
Takeda, Mitsuo; Miyano, Hiroshi; and Nagaoka, Hideyuki, to Tokyo Shibaura Electric Co., Ltd. Luminescent alphanumeric indicating tube having plural fluorescent layers. 3,737,705, Cl. 313-108.00r.
Takeda, Naozi: *See—*
Kitamori, Teruaki; and Takeda, Naozi, 3,737,697.
Tamura, Ryoji: *See—*
Sakamoto, Kazuo; and Tamura, Ryoji, 3,737,804.
Tanabe Kakoki Co., Ltd.: *See—*
Horiee, Koichi; Yosioa, Tsunencbo; and Machida, Tokuji, 3,737,554.
Tanabe Seiyaku Co., Ltd.: *See—*
Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, 3,737,454.
Tanaka, Masaru: *See—*
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, 3,737,740.
Tann Co.: *See—*
Kearns, Robert W., 3,737,750.
Tarchalski, Edward, to Heinemann Electric (South Africa) Limited. Earth leakage detector for operating circuit interrupting means. 3,737,726, Cl. 317-18.00d.
Tarrson Company: *See—*
Keces, Mervyn L., 3,736,697.
Taube, Robert Otto: *See—*
Cantral, John Isaac; and Taube, Robert Otto, 3,736,988.
Tawa, Kan, to Yamauchi Rubber Industry Co., Ltd. Apparatus for adjusting the altitude of the chord of an expanding roll. 3,736,636, Cl. 29-116.0ad.
Taylor, Glenn N., to Kendall Company, The. Balloon catheter with soluble tip. 3,736,939, Cl. 128-349.00b.
Taylor, Jack R.: *See—*
Du Bell, Thomas L.; and Taylor, Jack R., 3,736,746.
Taylor, Janet Louise: *See—*
Taylor, Marvin A.; and Taylor, Janet Louise, 3,737,161.
Taylor, Marvin A.; and Taylor, Janet Louise. Enviromental playground for handicapped children. 3,737,161, Cl. 272-60.000.
Techcrete, Inc.: *See—*
Koch, Carl; and Lipshutz, Joel Leon, 3,736,709.
Technica-Guss GmbH: *See—*
Krall, Heribert; and Koch, Hans Adalbert, 3,736,979.
Teders, Phillip J., to Sarns, Inc. Motor speed control circuit with unijunction transistor line voltage compensation. 3,737,748, Cl. 318-331.000.
Tehrani, Nadji: *See—*
Feltzin, Joseph; and Tehrani, Nadji, 3,737,391.
Tekart, Erich H.: *See—*
Hearn, Eric W.; Schwuttre, Guenter H.; and Tekart, Erich H., 3,737,282.
Teldec Telefunken-Decca Schallplatten G.m.b.H.: *See—*
Redlich, Horst; and Klemp, Hans-Joachim, 3,737,589.
Telecommunications Technology, Incorporated: *See—*
Lubarsky, Andre, Jr., 3,737,766.
Teledyne, Inc.: *See—*
Hastings, Charles E., 3,737,635.
Teledyne Industries, Inc.: *See—*
Kirkpatrick, Burnard M., 3,737,913.
Telefonaktiebolaget L M Ericsson: *See—*
Endersz, Gyorgy Geza, 3,737,777.
Telefunken Patentverwertungs-gesellschaft m.b.H: *See—*
Bachmeier, Alfred, 3,737,380.
Tellerman, Edward M.; Kashden, Richard Paul; Schussel, Edward W.; and Vossen, Robert J., to Wesco Industries Corporation. Yarn feeding and storage device for textile producing machine. 3,737,112, Cl. 242-47.010.
Templeman, Arthur R.: *See—*
Crabaugh, Kenneth G.; and Templeman, Arthur R., 3,736,809.
Tennelec, Inc.: *See—*
Kurz, Rainer, 3,737,794.
Terase, Hitoshi; and Namikawa, Sumio, to Kyokuto Boeki Kaisha, Ltd. Automatic insulation characteristic analyzing device. 3,737,769, Cl. 324-54.000.
Texaco Inc.: *See—*
Suggitt, Robert M., 3,737,460.
Texas Instruments, Incorporated: *See—*
Strachan, Richard W., 3,737,752.
Textron, Inc.: *See—*
Flachbarth, Charles T.; Hadfield, Robert W.; and Harding, William H., 3,736,713.
Thaddey, Kurt: *See—*
Grossmann, Walter; and Thaddey, Kurt, 3,736,856.
Theissen, Ferdinand: *See—*
Schreyer, Gerd; Theissen, Ferdinand; and Weiberg, Otto, 3,737,519.
Theodosopoulcs, James; and MacKay, Stanley, to Sylvania Electric Products, Inc. Dark coated meater for vacuum tube cathode. 3,737,714, Cl. 313-337.000.
Thermal Laminating Corporation: *See—*
Levitan, Maurice D., 3,737,359.
Thexton, Graham Spencer: *See—*
Morton, John; Stevesn, Keith Drummond; and Thexton, Graham Spencer, 3,737,821.
Thies, Jerome A.: *See—*
Shankwitz, Robert F.; and Thies, Jerome A., 3,736,675.
Thomas & Betts Corporation: *See—*
Sosinski, Charles W., 3,736,627.
Thomas, Daniel C., to Lithcplte, Inc. Bisphenol-a-furmarate polyester-cinnamate photopolymer. 3,737,407, Cl. 260-47.0ua.
Thommen, Hans; and Weiser, Harald. Coccidiostatic and growth promoting compositions. 3,737,534, Cl. 424-229.000.
Thompson, Richard E., to United States of America, National Aeronautics and Space Administration. On-film optical recording of camera lens settings. 3,736,849, Cl. 95-1.100.
Thompson, Tommy Lewis: *See—*
Churchill, John P.; and Thompson, Tommy Lewis, 3,737,287.
Thompson, William Stanley, to Elkhart Brass Manufacturing Co., Inc. Fire hose rack. 3,736,952, Cl. 137-355.280.
Thoren, Karl Oskar Birger, to Thoren, Olof. Tube compressor. 3,737,078, Cl. 222-192.000.
Thoren, Olof: *See—*
Thoren, Karl Oskar Birger, 3,737,078.
Thornbrugh, Lloyd E. Trailer anchors. 3,736,711, Cl. 52-149.000.
Throckmorton, Peter E.; Aelony, David; Egan, Richard R.; and Otey, Felix H., to United States of America, Agriculture. Biodegradable surfactants from starch-derived glycosides. 3,737,426, Cl. 260-210.00r.
Thuries, Edmond; and Joly, Francois, to Delle-Alsthom. Control device for auxiliary circuit breaker switches. 3,737,819, Cl. 335-16.000.
Thurston, James R.: *See—*
Roberts, Henry J.; Thurston, James R.; and Dinsdale, Vern Thomas, 3,736,877.
Tillman, Henry R.: *See—*
Raum, John F.; and Tillman, Henry R., 3,736,606.
Tjernlund, Derrick M.: *See—*
Tjernlund, Donald F.; and Tjernlund, Derrick M., 3,737,178.
Tjernlund, Donald F.; and Tjernlund, Derrick M. Book page holder. 3,737,178, Cl. 281-42.000.
Tluor Corporation: *See—*
Carstens, Daniel K.; and Edwards, Beverly C. D., Jr., 3,736,760.
Tobey, Albert E.; and Wood, Alvis W., to United States of America, Navy. Switch seal. 3,737,605, Cl. 200-168.00g.
Toishi, Toshihiko: *See—*
Nagao, Tsuguki; and Toishi, Toshihiko, 3,737,608.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Horino, Shigeo, 3,737,051.
Iwai, Naoji; and Kuse, Takashi, 3,737,308.
Nagao, Tsuguki; and Toishi, Toshihiko, 3,737,608.
Sakuragi, Johji; and Kameda, Kazuhiko, 3,737,911.
Suzjki, Yasoui, 3,737,673.
Takeda, Mitsuo; Miyano, Hiroshi; and Nagaoka, Hideyuki, 3,737,705.
Tsuneta, Asahide; and Ikegaki, Makoto, 3,736,848.
Tsuneta, Asahide; and Sawagata, Shinichi, 3,737,703.
Tomioka, Hideo: *See—*
Nagano, Hiroshi; Tomioka, Hideo; Yamataka, Akira; and Yoshida, Hirohiko, 3,737,495.
Tomozawa, Atsushi, to Nippon Electric Company Limited. Digital communication system. 3,737,780, Cl. 325-38.00b.
Tontini, Remo, to Rohr Corporation. Thrust augmenting and sound suppressing apparatus. 3,737,005, Cl. 181-33.0hc.
Torell, Spencer P.: *See—*
Pilpel, Walter; Torell, Spencer P.; and Spaeth, Charles E., 3,737,250.
Torr, Alfred G.: *See—*
Torr, Alfred George; and Webb, Kevin William Caton, 3,737,321.
Torr, Alfred George; and Webb, Kevin William Caton, to Torr, Alfred G. Screens used in photomechanical reproduction. 3,737,321, Cl. 96-116.000.
Toshima, Yoshitaka: *See—*
Mabuchi, Osamo; Toshima, Yoshitaka; and Saio, Takashi, 3,736,742.
Tosteson, Daniel C., to Duke University, Inc. Instantaneous measurement of potassium and other specific ion activities. 3,737,379, Cl. 204-1.00f.
Toth, Alex, to Ellis Corporation. Dual controlled valve assembly. 3,737,140, Cl. 251-14.000.
Toth, John E.; and Grant, Arthur G. Precision sorting apparatus. 3,737,033, Cl. 209-74.00r.
Tourtellotte, John F.: *See—*

Negra, John S.; Tourtellotte, John F.; and Warshaw, Abe, 3,737,396.
Towmotor Corporation: *See—*
Shaffer, Walter M., 3,737,060.
Townsend, Bruce A., to Kimberly-Clark Corporation. Coating applicator arrangement. 3,736,903, Cl. 118-218.000.
Townsend, Robert H.: *See—*
Snelling, Christopher; Little, William S.; and Townsend, Robert H., 3,737,310.
Toyama, Akira; Matsumoto, Itsuro; and Izumichi, Tetsuo, to Kobe Steel, Ltd. Method of producing the gaseous and liquefied nitrogen and an apparatus used therefor. 3,736,762, Cl. 62-13.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Gocho, Sinobu, 3,737,383.
Toyo Rubber Chemical Industrial Corporation: *See—*
Kumasaka, Sadao; Suzuki, Satomi; Yoshino, Takeo; and Kobayashi, Tutomu, 3,737,400.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,737,483.
Toyoda, Kenji: *See—*
Ono, Shiego; Hamaguchi, Ichiro; and Toyoda, Kenji, 3,736,851.
Toyoda Koki Kabushiki Kaisha: *See—*
Kuno, Hiroshi; Suzuki, Kenji; and Ishikawa, Mineo, 3,737,684.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ito, Shin; and Kubo, Seitoku, 3,736,815.
Traffic Safety Systems, Inc., mesne: *See—*
Marshall, Arthur N.; Rinehart, James W.; and Gregory, Charles A., Jr., 3,737,851.
Tramontozzi, Anthony: *See—*
Hoover, Lawrence E., 3,737,691.
Treder, Wilfred F. W.: *See—*
Estabrook, Mark R.; and Treder, Wilfred F. W., 3,736,703.
Tregerman, Leon; and Brindle, Stanley M., to Addressograph-Multigraph Corporation. Apparatus for preparing a binary coded record. 3,737,868, Cl. 340-172.500.
Trelut, Jean Marie; and Michel, Jean Bernard, to International Standard Electric Corporation. Electric control distributor. 3,737,869, Cl. 340-172.500.
Trickel, Ralph J.: *See—*
Mayer, Bromley M.; and Trickel, Ralph J., 3,737,327.
Trousdale, Robert B.: *See—*
Cavin, Doyle K.; and Trousdale, Robert B., 3,737,867.
Trowern, Howard M., Jr.: *See—*
Serrell, John J.; Sparks, George C.; and Trowern, Howard M., Jr., 3,737,029.
Trub, Jean: *See—*
Schaeffer, Gerard; Trub, Jean; and Bouvet, Jean, 3,737,151.
TRW Inc.: *See—*
Breuer, David R.; and Buie, James L., 3,737,742.
Cooper, Paul, 3,737,249.
Hayden, Rodney, 3,737,848.
Howell, Glen W.; and Gilroy, Robert G., 3,737,103.
Trzyna, William A.: *See—*
Frizane, Kenneth; and Trzyna, William A., 3,737,572.
Tsou, Ivan H.; and Garner, James W., to Grow Chemical Corporation. Method of making powder paint. 3,737,401, Cl. 260-23.00r.
Tsuhoi, Yasuyuki: *See—*
Takatori, Toshimitsu; Shinoda, Katsuro; and Tsuhoi, Yasuyuki, 3,737,560.
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Tsuzaki, Takehiro: *See—*
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, 3,737,740.
Tuckett, William F.: *See—*
Alleman, Carl E.; and Tuckett, William F., 3,736,725.
Turchetti, Gianni: *See—*
Mezzanotte, Mario; Carretta, Ferdinando; and Turchetti, Gianni, 3,736,973.
Turner, Carlon N.: *See—*
Cox, James R.; and Turner, Carlon N., 3,737,630.
Turner, Edward T., Jr.: *See—*
Beaver, Bob; and Turner, Edward T., Jr., 3,737,094.
Turner, Garland Linwood; Schuettler, Ralph William; and Collingwood, George Howard, to Allied Chemical Corporation. Process for manufacture of high sheen bifilament yarn and elastic textile article. 3,737,505, Cl. 214-177.00f.
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Tuttle, Joey K.: *See—*
Frankeny, Richard F.; and Tuttle, Joey K., 3,737,637.
U. S. Industries, Inc.: *See—*
Contratto, James, 3,737,834.
Uchida, Kozo. Gate circuit. 3,737,680, Cl. 307-257.000.
Ueki, Masaaki: *See—*
Mukaiyama, Teruaki; Ueki, Masaaki; Matsueda, Rei; and Maruyama, Hiroshi, 3,737,423.
Uemura, Masaru: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,737,483.
Ueno, Kaoru: *See—*
Motojima, Kenji; Sakurai, Hiroshi; Onishi, Hiroshi; Sasaki, Yasuichi; Koike, Mitsuru; and Ueno, Kaoru, 3,737,373.
Ugine Kuhlmann: *See—*
Ebel, Jean Pierre; Colobert, Louis Eugene Marie; and Louisot, Pierre, 3,737,524.
Uhlig, Gerhardt E. Mold structure for molding skirted closures having integral lugs on the inside surface thereof. 3,737,277, Cl. 425-438.000.
U.I.D. Electronics Corporation: *See—*
Arthur, Ronald H.; Eickhorst, Melvin F.; and Hansen, Earl A., 3,737,601.
Ujiie, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for manufacturing spherical metallic vessels or hemispherical vessel heads. 3,737,616, Cl. 219-76.000.
Ulmer, Harry L.: *See—*
Cheema, Zafarullah K.; Formaini, Robert L.; and Ulmer, Harry L., 3,737,462.
Ulrich, Henri: *See—*
Smith, Curtis P.; and Ulrich, Henri, 3,737,456.
Ulvac Corporation: *See—*
Hashimoto, Koichi; and Kishida, Hideko, 3,737,045.
Underwood, Gerald E.: *See—*
Nook, Mary A.; Renis, Harold E.; and Underwood, Gerald E., 3,737,550.
Unex Machine & Tool Co., Inc.: *See—*
Grady, Francis J., 3,737,269.
Unifilm Corporation: *See—*
DeVries, Edward R., 3,737,402.
Union Carbide Corporation: *See—*
Clark, Jared W.; and Rectenwald, Charles E., 3,737,388.
Clark, Jared W.; and Rectenwald, Charles E., 3,737,389.
Clark, Jared W.; and Rectenwald, Charles E., 3,737,390.
Petersen, Donald Edwin, 3,736,769.
Union Oil Company of California: *See—*
Fenton, Donald M., 3,737,459.
Sarem, Amir M., 3,737,500.
Uniroyal Inc.: *See—*
Covell, Gerald P., 3,736,825.
Paul, Richard Henry; and Wilson, James Perry, 3,736,971.
United Aircraft Corporation: *See—*
Stone, Hilton F., Jr., 3,736,638.
Walker, Robert C.; and Wyde, Sidney S., 3,736,748.
United Electric Controls Company: *See—*
Reis, Robert D., 3,736,808.
United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the: *See—*
Paige, Edward George Sydney, 3,737,811.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Wilson, John Dennis, 3,737,152.
United Kingdom of Great Britian and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Fuller, John Rodney Dyson, 3,736,751.
United Merchants and Manufacturers, Inc.: *See—*
Horn, Harvey S., 3,737,360.
United States of America
Agriculture: *See—*
Halbrook, Noah J.; and Lawrence, Ray V., 3,737,453.
Throckmorton, Peter E.; Aelony, David; Egan, Richard R.; and Otey, Felix H., 3,737,426.
Air Force: *See—*
Roberts, Henry J.; Thurston, James R.; and Dinsdale, Vern Thomas, 3,736,877.
Army: *See—*
Kaprelian, Edward K.; and Carroll, Howard I., 3,736,837.
Schultz, Seiford F.; and Higgins , James H., 3,737,348.
Atomic Energy Commission: *See—*
Cutchen, John T.; Haertling, Gene H., Jr.; and Harris, James O., Jr., 3,737,211.
Liu, Chain T.; and Inouye, Henry, 3,737,309.
McCoy, Donald D.; Shue, Bruce H.; and Gutmacher, Ralph G., 3,737,789.
Weaver, Cliff V.; Ranken, William A.; and Lawton, Robert G., 3,736,658.
Wood, Myrick R.; Duane, Bernard H.; and Lessor, Delbert L., 3,736,798.
Atomic Energy Commission, mesne: *See—*
Biondi, Frank J., 3,736,794.
Interior: *See—*

Ehrlich, Shelton; Bishop, John W.; and Robison, Ernest B., 3,736,908.
Sweeny, Keith H.; and Fischer, James R., 3,737,384.
National Aeronautics and Space Administration: *See*—
Belew, Robert R., 3,737,117.
Chambers, Alan B.; Blackaby, James R.; and Billingham, John, 3,736,764.
Coles, Willard D., 3,737,824.
Cribb, Herbert E., 3,737,912.
Deerkoski, Leonard F., 3,737,781.
Evans, Jack, 3,737,118.
Evvard, John C.; McGannon, William J.; and Vargo, Donald J., 3,736,938.
Fowler, John T.; and Raposa, Frank L., 3,737,757.
Haines, Richard F.; Fitzgerald, James W.; and Rositano, Salvadore A., 3,737,217.
Haroules, George G.; and Brown, Wilfred E., 3,737,905.
Howard, Frank S., 3,736,956.
Jones, Robert T., 3,737,121.
Radnofsky, Matthew I.; Barnett, James H., Jr.; Harrison, Floyd L.; and Marak, Ralph J., 3,736,607.
Thompson, Richard E., 3,736,849.
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Lutes, George F., Jr. Low phase noise digital frequency divider. 3,737,676, Cl. 307-220.000.
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Navy: *See*—
Bobrin, Marshall C., 3,737,842.
Brown, Bruce J., 3,737,790.
Cantwell, Joseph R.; Fagin, Samuel L.; and Strell, Hyman, 3,736,791.
Childers, Carroll Dean, 3,736,839.
Cox, James R.; and Turner, Carlon N., 3,737,630.
Gaudio, Joseph G.; and Debski, Thomas R., 3,737,812.
Gerber, Robert L., 3,736,874.
Karig, Horace L., 3,736,745.
Little, Steven M.; Lyons, John H.; Noles, Ronald C.; St. Amand, Pierre; Hazelton, Donald R.; Johnson, Duane M.; and Riester, James J., 3,736,876.
McKenzie, Joe A.; and Lindsey, Carl B., 3,737,771.
Pilpel, Walter; Torell, Spencer P.; and Spaeth, Charles E., 3,737,250.
Pontello, Anthony P., 3,736,790.
Swanekamp, James E.; and Malloy, John H., 3,737,686.
Tobey, Albert E.; and Wood, Alvis W., 3,737,605.
Navy, mesne: *See*—
Green, Elberson D., 3,737,120.
Universal Oil Products Company: *See*—
Dombro, Robert A., 3,737,468.
Hall, Garth O.; and Zach, Donald J., 3,737,197.
Spielberg, David Henry; and Levesque, Charles J., 3,736,648.
Urban, Peter, 3,737,517.
Upjohn Company, The: *See*—
Bannister, Brian, 3,737,425.
Hester, Jackson B., Jr., 3,737,434.
Moon, Malcolm W.; and Rizzo, Victor L., 3,737,533.
Nook, Mary A.; Renis, Harold E.; and Underwood, Gerald E., 3,737,550.
Smith, Curtis P.; and Ulrich, Henri, 3,737,456.
Urabe, Hitoshi; Nagao, Kimitioshi; and Takano, Masao, to Fuji Photo Film Co., Ltd. Contact printer for photographic material. 3,737,228, Cl. 355-78.000.
Urban, Peter, to Universal Oil Products Company. Method for reducing oxysulfur compounds. 3,737,517, Cl. 423-560.000.
U.S. Industries, Inc.: *See*—
Carroll, Richard W., 3,737,031.
U.S. Philips Corporation: *See*—
Aldenhoven, Chislanus Matheus Anthonius Maria, 3,737,600.
Boer, Dirk, 3,737,561.
Bruinsma, Anne Hendrik, 3,737,564.
Gerritsen, Jan, 3,737,716.
Hoeberechts, Arthur Marie Eugene; and Kooi, Else, 3,737,701.
Horman, Johannes Petrus; Van Esdonk, Johannes; and Visser, Jan, 3,737,709.
Horowitz, Alexandre; Beusink, Bernard Joseph; and Cuypers, Martinus Hubertus, 3,736,803.
Ketelaar, Peter, 3,737,563.
Kooi, Else; and Hoeberechts, Arthur Marie Eugene, 3,737,702.
Richmond, Thomas C.; and Bertsch, Peter K., 3,736,761.
Sangster, Frederik Leonard Johan, 3,737,683.
Skoyles, Derek Robert, 3,737,200.
Van Doorn, Willem, 3,737,795.
Verhagen, Jan, 3,737,774.
U.S. Philips Corporation, mesne: *See*—
Van Gerwen, Petrus Josephus; and Harmsen, Willem, 3,737,778.
Usami, Sadao, to Jadow, B., and Sons, Inc. Dial for engraving finger rings and the like. 3,736,841, Cl. 90-62.00r.
USM Corporation: *See*—
Davies, Leonard J. L., 3,737,074.
Gray, Richard W., 3,736,892.
Uthmann, Walter: *See*—
Reth, Erich; and Uthmann, Walter, 3,737,021.
Vaalburg, Thomas T., to Sarns, Inc. Low pressure check valve. 3,736,953, Cl. 137-430.000.
Vaillancour, Thomas L.; and Sanders, Wayne W., to General Motors Corporation. Series gap spark plug. 3,737,708, Cl. 313-120.000.
Vaillier, Roland: *See*—
Faraguet, Claude; and Vaillier, Roland, 3,737,798.
Valentine, Harry M., to Bendix Corporation, The. Breathing and failure detection system for spring brakes. 3,736,842, Cl. 91-1.000.
Vallone, Giacinto, to General Electric Company. Grounded probe ejector. 3,737,623, Cl. 219-441.000.
Value Engineered Components, Inc.: *See*—
Ryder, Francis E., 3,737,268.
Valyi, Emery I. Apparatus for making composite plastic articles. 3,737,259, Cl. 425-112.000.
van Beek, Gerardus J. H.: *See*—
van Meijel, Henricus J. M.; and van Beek, Gerardus J. H., 3,737,230.
Van Den Broek, Albertus Joannes, to Akzona Incorporated. Novel process for the preparation of 6 alpha-alkyl-19-nor-steroids. 3,737,427, Cl. 260-397.300.
Van Der Lely, Ary. Crop driers. 3,736,670, Cl. 34-218.000.
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Van Esdonk, Johannes: *See*—
Horman, Johannes Petrus; Van Esdonk, Johannes; and Visser, Jan, 3,737,709.
Van Gerwen, Petrus Josephus; and Harmsen, Willem, to U.S. Philips Corporation, mesne. Device for the transmission of synchronous pulse signals. 3,737,778, Cl. 325-322.000.
Van Horn, James W.: *See*—
Antonson, Arvid L.; Bigelow, John E.; Stein, Charles R.; Mc Campbell, Carroll B.; and Van Horn, James W., 3,737,212.
van Meijel, Henricus J. M.; and van Beek, Gerardus J. H., to Oce-van der Grinten N.V. Web transport systems for copying machines. 3,737,230, Cl. 355-111.000.
Vanderbilt, R. T., Company, Inc.: *See*—
Karsten, Kenneth S.; and Beadley, Charles Edward, Jr., 3,737,551.
Vannoy, Everett H.: *See*—
Summe, Richard D.; and Vannoy, Everett H., 3,737,825.
Varadi, Peter F.; and Sebestyen, Laslo Gabor. Method of manufacturing a transducer head for magnetic recording/reproducing apparatus. 3,736,657, Cl. 29-603.000.
Vargiu, Silvio; Nistri, Ugo; and Passalenti, Beppino, to Societa' Italiana Resine S.p.A. Process for preparing photochemically hardenable compositions comprising a photosenitive substance and an unsaturated polyester. 3,737,481, Cl. 260-865.000.
Vargo, Donald J.: *See*—
Evvard, John C.; McGannon, William J.; and Vargo, Donald J., 3,736,938.
Varian Associates: *See*—
Anderson, Norman C., 3,736,650.
Polese, James P., 3,737,711.
Vassilaros, George L.: *See*—
Byrnes, Charles J.; and Vassilaros, George L., 3,737,306.
VCA Metal Fabrications, Inc.: *See*—
Kruck, Ralph E., 3,736,945.
Veeder Industries, Inc.: *See*—
Brunone, Peter P., 3,737,017.
Vehrs, Charles L., Jr., to North American Rockwell Corporation. Digital doppler processor. 3,737,900, Cl. 343-7.00a.
Veloso, Alberto E., to Internationale Erfinder-und Patentanstalt. Method for removing deleterious pollutant constituents of the exhaust gas of a combustion engine. 3,737,515, Cl. 423-212.000.
Vendo Company, The: *See*—
Crabaugh, Kenneth G.; and Templeman, Arthur R., 3,736,809.
Offutt, Elmer Bradley; and Babich, Edward, 3,737,071.
O'Neal, Wilbert O., 3,737,070.
Vera Fabrikker A/S: *See*—
Gilbu, Agnar, 3,737,353.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See*—
Glanzer, Stefan, 3,736,902.
Reitter, Gunther; and Riegler, Ernst, 3,736,807.
Verhagen, Jan, to U.S. Philips Corporation. Automatic level control device for use in telecommunication systems. 3,737,774, Cl. 325-2.000.
Verne, Stefan; and Heggs, Thomas Geoffrey, to British Insulated Callender & Cables Limited. Electric cables with ethylene-propylene insulation. 3,737,557, Cl. 174-23.00r.

Vida, Josef; and Hasewend, Florian. Compressed-air drilling equipment. 3,736,994, Cl. 175-103.000.

Vielavicencio, Eduardo J., to Process Evaluation and Development Corporation. Alkaline digestion of a mixture of cotton linters and fibrous vegetable material and product thereof. 3,737,369, Cl. 162-95.000.

Viers, Val R.: *See—*
Briggs, Lloyd A.; Kazen, Dave R.; and Viers, Val R., 3,737,222.

Vischer, Alfred, Jr., to Vischer Products Company. Infrared cooking apparatus. 3,736,860, Cl. 99-339.000.

Vischer Products Company: *See—*
Vischer, Alfred, Jr., 3,736,860.

Visser, Jan: *See—*
Hornman, Johannes Petrus; Van Esdonk, Johannes; and Visser, Jan, 3,737,709.

Vofsi, David: *See—*
Berger, Gila; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,737,469.

Vogellaar, Bernard Francis: *See—*
Jennings, Teari James; Vogellaar, Bernard Francis; and Lamp, Robert, 3,736,732.

Volkswagenwerke Aktiengesellschaft, mesne: *See—*
Benda, Klaus V.; Binder, Horst; and Paul, Wolfgang, 3,737,344.

Von Brachel, Hanswilli; and Aldebert, Friedrich, to Cassella Farbwerke Mainkur Aktiengesellschaft. Water-soluble metal phthalocyanine dyestuffs. 3,737,437, Cl. 260-314.500.

Von Kaenel, Walter: *See—*
Law, John M.; Stricker, Alfred A.; and Von Kaenel, Walter, 3,736,651.

Voorhees, Anson Willard, Sr.; deceased (by Voorhees, Margaret W., executrix). Method of reinforcing the wall of a thermo-formed article. 3,737,496, Cl. 264-92.000.

Voorhees, Margaret W.: *See—*
Voorhees, Anson Willard, Sr., 3,737,496.

Vossen, Robert J.: *See—*
Tellerman, Edward M.; Kashden, Richard Paul; Schussel, Edward W.; and Vossen, Robert J., 3,737,112.

Vujasinovic, Ado N., to Rucker Company, The. Combination shearing and shut-off ram for blowout preventer. 3,736,982, Cl. 166-55.000.

Wadia, Aspi B.: *See—*
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,737,870.

Wagner Electric Corporation: *See—*
Boeler, Richard C., 3,737,602.

Wagner, Frank Albert, Jr., to American Cyanamid Company. Cyclic O, O-(2,2-dimethyltrimethylene) phosphoro-chloridothioate as an agricultural pesticide. 3,737,529, Cl. 424-209.000.

Wagner, Gloria: *See—*
Yando, Stephen; and Wagner, Gloria, 3,736,946.

Wagner, Hans O., to Schiess Aktiengesellschaft. Lubricating device for a driving worm engaging a stationarily arranged worm gear rack. 3,737,008, Cl. 184-6.140.

Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Exposure indicator in a photographic camera. 3,737,240, Cl. 356-227.000.

Wagner, Melvin P.: *See—*
Doran, Thomas J.; Wagner, Melvin P.; and Stevens, Henry C., 3,737,334.

Wagner, Nicholas A., to Reynolds Metals Company. Extruding apparatus and method. 3,736,786, Cl. 72-255.000.

Wakamatsu, Hisato; and Kitano, Akira, to Nippondenso Co., Ltd. Protective device operative upon transistor failure. 3,737,887, Cl. 340-248.00e.

Walker, Robert C.; and Wyde, Sidney S., to United Aircraft Corporation. Spark igniter for combustion chambers. 3,736,748, Cl. 60-39.670.

Wall, David A.: *See—*
Rietz, Earl B.; McCloud, James R.; Koenn, Hubert J.; and Wall, David A., 3,737,831.

Wallace, Charles H., to International Telephone and Telegraph Corporation. Method and apparatus for slaughtering animals. 3,736,622, Cl. 17-24.000.

Wallace, David J.: *See—*
Straley, James M.; and Wallace, David J., 3,737,424.

Wallace, John G. Magnetic card reader-encoder. 3,737,884, Cl. 340-174.10r.

Walsh, Robert D. Heat exchanger for furnace pipes and the like. 3,736,961, Cl. 138-38.000.

Walsh, William J.: *See—*
Willard, Roland B.; Walsh, William J.; and Larson, John I., 3,737,627.

Walter, Marc, to Agence Nationale de Valoresation de La Recherche. Winding machine. 3,736,739, Cl. 57-13.000.

Walther, Dieter H., to International Standard Electric Corporation. Voltage adaptor circuit. 3,737,761, Cl. 307-130.000.

Walworth Company: *See—*
Heller, Kenneth G.; Ray, Harold T.; and Martens, Douglas A., 3,737,145.

Wannan, Mary Ellen. Toy for use with dolls. 3,736,695, Cl. 46-12.000.

Wanner, Karl; Bleicher, Manfred; Sigg, Horst; and Burklin, Max, to Bosch, Robert G.m.b.H. Chuck for hammer drills or the like. 3,737,170, Cl. 279-60.000.

Ward, Walter H., to South African Farm Implement Manufacturers Limited. V-type torison bar tillage tines. 3,737,156, Cl. 267-154.000.

Ward, William R., Jr., to Owens-Illinois, Inc. Apparatus for shearing uniform charges of glass from a molten stream of glass. 3,736,826, Cl. 83-600.000.

Warlop, Raymond: *See—*
Masson, Maurice; and Warlop, Raymond, 3,737,770.

Warn, Herman K.; and Lejdegard, Sixten H. Pierce nut. 3,736,969, Cl. 151-41.730.

Warren, Glenn B. Combustor. 3,736,747, Cl. 60-39.650.

Warshaw, Abe: *See—*
Negra, John S.; Tourtellotte, John F.; and Warshaw, Abe, 3,737,396.

Warwick Electronics Inc.: *See—*
Matzek, Lester Tucker, 3,737,562.

Washio, Takaji; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Apparatus for preventing successive jamming of copy sheets in copying apparatus. 3,737,159, Cl. 271-57.000.

Wasserstein, Paul B.: *See—*
Gordon, Harry W.; and Wasserstein, Paul B., 3,737,552.

Watanabe, Tetsuo: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Gocho, Sinobu, 3,737,383.

Watts, John D., to Hydril Company. Annular blowout preventer. 3,737,139, Cl. 251-1.000.

Waugh, Richard A., to General Electric Company. Additive dispenser for automatic washing machine. 3,736,773, Cl. 68-17.00a.

Waymouth, John F.; Keeffe, William M.; and Gungle, W. Calvin, to GTE Sylvania Incorporated. High pressure electric discharge device with getter of barium peroxide and copper. 3,737,710, Cl. 313-174.000.

Wean United, Inc.: *See—*
Somerhalder, Robert Alfred, 3,737,114.

Weaver, Cliff V.; Ranken, William A.; and Lawton, Robert G., to United States of America, Atomic Energy Commission. Thermionic gas-pressure-bonded sheathed insulators and method of producing same. 3,736,658, Cl. 29-631.000.

Webasto-Werk W. Baier KG: *See—*
Lutz, Alfons; and Kandler, Georg, 3,737,194.

Webb, Douglass G., Jr.: *See—*
Marangoni, Elvino; and Webb, Douglass G., Jr., 3,736,909.

Webb, Kevin William Caton: *See—*
Torr, Alfred George; and Webb, Kevin William Caton, 3,737,321.

Wech, Robert J., to FMC Corporation. Draw roll assembly for bag machine. 3,737,090, Cl. 226-187.000.

Wegler, Richard: *See—*
Jager, Gerhard; and Wegler, Richard, 3,737,429.

Weiberg, Otto: *See—*
Schreyer, Gerd; Theissen, Ferdinand; and Weiberg, Otto, 3,737,519.

Weir, Jackie A., to Du Pont de Nemours, E. I., and Company. Dry spinning apparatus and process. 3,737,508, Cl. 264-204.000.

Weiser, Harald: *See—*
Thommen, Hans; and Weiser, Harald, 3,737,534.

Weiste, Helmut; and Schumacher, Ferdinand. Variable length upper guide rod for a three-point loading rack. 3,736,845, Cl. 91-390.000.

Wellauer, Edward J., to Falk Corporation, The. Speed reducer recirculating cooling system. 3,736,812, Cl. 74-606.00a.

Wellman Industries Inc.: *See—*
Johns, Herman S., 3,736,625.

Wells, John B., to Xerox Corporation. Electrostatic particle transfer imaging process. 3,737,311, Cl. 96-1.00r.

Wells, Ralph E.: *See—*
Davis, Bernard T., 3,737,671.

Wells, Raymond C.: *See—*
Davis, Bernard T., 3,737,671.

Welsch, Wolfgang: *See—*
Froelich, Dieter; and Welsch, Wolfgang, 3,737,876.

Werdehausen, Achim, to Henkel & Cie G.m.b.H. Washing, bleaching and cleansing agents containing poly-(N-alkyldicarboxylic acid)-alkyleneimines. 3,737,385, Cl. 252-102.000.

Werkzeugmaschinenfabrik Gildemeister & Comp. AG, mesne: *See—*
Junike, Wilhelm August Karl; and Hauck, Theodor Franz, 3,737,753.

Werner & Mertz GmbH: *See—*
Schneider, Helmut, 3,737,104.

Werner, John R., to Burroughs Corporation. Method and apparatus for bypassing display register update during procedure entry. 3,737,864, Cl. 340-172.500.

Wesco Industries Corporation: *See—*
Tellerman, Edward M.; Kashden, Richard Paul; Schussel, Edward W.; and Vossen, Robert J., 3,737,112.

West, Harold H., to Robbins Company, The. High torque boring machine. 3,736,993, Cl. 173-163.000.

Western Electric Company, Incorporated: *See—*
Blendinger, Frederick Lawrence; and Littlefield, Donald Frank (said Littlefield, Donald F., assor. to), 3,737,655.
Cranston, Benjamin Howell, 3,736,654.
Deitrick, Rollin E., 3,737,072.
Novak, George J., 3,737,271.
Raum, John F.; and Tillman, Henry R., 3,736,606.

Western Gear Corporation: *See—*
De Neefe, John H.; Pistel, Conrad; and Schwarzbeck, John G., 3,737,022.

Western Hat Corral Co.: *See—*
James, Frank R., 3,737,081.

Westfall, Theodore R., to Sweco, Inc. Up-flow separator. 3,737,038, Cl. 210e78.000.
Westinghouse Air Brake Company: *See*—
Darrow, John O. G., 3,737,806.
Haydu, Andrew G., 3,737,012.
Westinghouse Electric Corporation: *See*—
Chamberlin, Richard M.; and Stana, Regis R., 3,737,044.
Harbour, Philip F.; and Wilcox, Charles A., 3,736,768.
Westlund, Arnold: *See*—
Biggs, Orrick Howard; Homer, Horace H.; Lougheridge, Frederick A.; and Westlund, Arnold, 3,737,653.
Weston Chemical Co., Inc.: *See*—
Hechenbleikner, Ingenuin, 3,737,485.
Weston Paper and Manufacturing Co., The: *See*—
Beaver, Bob; and Turner, Edward T., Jr., 3,737,094.
Westphal, Gordon W.: *See*—
Barna, Theodore B.; Dimmick, Roger F.; Ricklefs, Merlin J.; Schaffer, Walter S.; and Westphal, Gordon W., 3,737,097.
Westvaco Corporation: *See*—
Obenshain, David Noel, 3,736,821.
Whirlpool Corporation: *See*—
Bottas, Michael J.; and Difley, Charles R., 3,736,864.
Linstromberg, William J., 3,736,766.
Marple, Walter L., 3,737,387.
White, Donald M.: *See*—
White, Merwin G.; and White, Donald M., 3,737,381.
White, Fred K., to Mulwhiteson Development Company. Antibiotic treatment of fish diseases. 3,737,526, Cl. 424-181.000.
White, James A., to General Electric Company. Self-cleaning oven door structure. 3,736,916, Cl. 126-198.000.
White, Merwin G.; and White, Donald M., to Mutual Mining and Refining, Ltd. Apparatus for treating copper ores. 3,737,381, Cl. 204-263.000.
White, Velton C. Impression tray. 3,736,663, Cl. 32-17.000.
White, William E., Jr., to Hydrotech Services, Inc. Submarine connection for misaligned pipes. 3,737,179, Cl. 285-96.000.
Whitecar, Alten E., to Smith Kline & French Laboratories. Stack package. 3,737,026, Cl. 206-42.000.
Whitehead, George B., to Elmatic Corporation. Snap-in type lamp bulb socket. 3,737,837, Cl. 339-127.000.
Whitehead, Stanley. Water vessel having double hull. 3,736,608, Cl. 9-6.000.
Wibau Westdeutsche Industrie- und Strassenbau Maschinen-Gesellschaft m.b.H.: *See*—
Muntzer, Emile; and Muntzer, Paul, 3,737,149.
Wick, Richard; Bestenreiner, Friedrich; and Deml, Reinhold, to Agfa-Gevaert Aktiengesellschaft and 999. System for reproducing color images 77/77/77. 3,737,574, Cl. 178-5.200.
Widenhofer, James W.: *See*—
Milligan, Ronald R.; and Widenhofer, James W., 3,736,954.
Wiedermann, Wolfgang. Rotary drum furnace. 3,736,887, Cl. 110-8.00r.
Wiewiorowski, Tadeusz Karol; and Miller, David James, to Freeport Minerals Company. Recovery of uranium from an organic extractant by back extraction with H PO or HF. 3,737,513, Cl. 423-8.000.
Wilcox, Charles A.: *See*—
Harbour, Philip F.; and Wilcox, Charles A., 3,736,768.
Wildbolz, Rudolf: *See*—
Alt, Hans Rudolf; Just, Christian; and Wildbolz, Rudolf, 3,736,624.
Wildi, Bernard S., to Monsanto Company. Methylolated olefin-maleimide copolymers and method for preparing same. 3,737,412, Cl. 260-67.500.
Wilding, Frank, to Imperial Chemical Industries Limited. Production of thermoplastic filamentary yarn. 3,737,503, Cl. 264-167.000.
Wilkinson, Richard W.: *See*—
Jones, Lewis E.; and Wilkinson, Richard W., 3,737,597.
Willard, Roland B.; Walsh, William J.; and Larson, John I., to Sybron Corporation. Electric test tube heater. 3,737,627, Cl. 219-521.000.
Williams, Herschel C.: *See*—
Schutze, Henry G.; Williams, Herschel C.; Neureiter, Norman P.; and Bown, Delos E., 3,737,486.
Williams, James E.: *See*—
Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,736,653.
Williams, Steele D., to Harrington, F. Edward. Impulse burner system and burner therefor. 3,737,279, Cl. 431-158.000.
Williamson, Burch A., to Ledex, Inc. Rotary wafer switch with flanged rotor. 3,737,593, Cl. 200-11.00d.
Williamson, John E., to Kenney Manufacturing Company. Master carrier for drapery traverse rod. 3,736,620, Cl. 16-87.40r.
Williamson, Reginald Ian; and Lowey, Roy, to L.T.W. Electronics Limited. Printed circuit mask manufacture. 3,736,857, Cl. 95-12.000.
Willis, Candler A., Jr., to General Electric Company. Lighting system with auxiliary lamp control circuit. 3,737,720, Cl. 315-91.000.
Wilson, Eugene M.: *See*—
Black, William J.; Lanz, William E.; and Wilson, Eugene M., 3,736,664.
Wilson, James Perry: *See*—
Paul, Richard Henry; and Wilson, James Perry, 3,736,971.
Wilson, John Dennis, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Cooling of hot fluid ducts. 3,737,152, Cl. 263-44.000.
Wilson, Robert Glen. Soil compactor. 3,737,244, Cl. 404-117.000.
Windbichler, Josef: *See*—
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, 3,736,972.
Winstel, Guenter: *See*—
Heywang, Walter; Winstel, Guenter; and Zschauer, Karl-Heinz, 3,737,737.
Winters, Arthur R., to Pengo Corporation. Pilot bit with reinforcing ribs. 3,736,996, Cl. 175-392.000.
Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Locking attaching mechanism for disk-pack storage container. 3,736,777, Cl. 70-63.000.
Wise, Marcus Sylvester. Reinforcing rod chairs. 3,736,719, Cl. 52-677.000.
Wise, Raleigh Warren: *See*—
Campbell, Robert Henry; and Wise, Raleigh Warren, 3,737,431.
Wise, William B.: *See*—
Bonetti, Giovanni A.; Rosenthal, Rudolph; Kieras, Joseph A.; and Wise, William B., 3,737,518.
Witkowski, Sigmund. Combination bobber-sinker. 3,736,690, Cl. 43-43.140.
Witte, Josef: *See*—
Schnoring, Hildegard; Pampus, Gottfried; Schon, Leverkusen Nikolaus; and Witte, Josef, 3,737,337.
Witton-James Limited: *See*—
Baker, Noel John, 3,737,115.
Wochnowski, Waldemar: *See*—
Elsner, Uwe; and Wochnowski, Waldemar, 3,736,942.
Wolf, William D., to Monsanto Company. Forming deep molecularly oriented articles from high nitrile group containing polymers. 3,737,494, Cl. 264-89.000.
Wolfelsperger, Robert O. Method for making a skin package using a single film web. 3,736,721, Cl. 53-22.00a.
Wolfer, Allan J.; and Cooper, Edward, to Eastman Kodak Company, mesne. Apparatus for sensing and processing missing or erroneously recorded information. 3,737,853, Cl. 340-146.10f.
Wolfram, Adolf, to General Electric Company. Electronic signal seeking system with rapid scan. 3,737,787, Cl. 325-470.000.
Wolter, Charles R.; and Gustafson, Thomas G. Fluidic respirator. 3,736,949, Cl. 137-102.000.
Wondergem, Hendrik M.: *See*—
Lazenby, Peter G.; and Wondergem, Hendrik M., 3,737,768.
Wood, Alvis W.: *See*—
Tobey, Albert E.; and Wood, Alvis W., 3,737,605.
Wood, Harold V.; and Brown, Terry D., to Phillips Petroleum Company. Copolymers stabilized with a thiouracil compound. 3,737,484, Cl. 260-880.00b.
Wood, Lee. Exercise device. 3,737,162, Cl. 272-68.000.
Wood, Myrick R.; Duane, Bernard H.; and Lessor, Delbert L., to United States of America, Atomic Energy Commission. Permanent magnet probe flowmeter. 3,736,798, Cl. 73-194.0em.
Wood, Warren A.; and Fechner, John T., to Pittsburgh Forests, Inc. Feeder for wood flaking or chipping machine. 3,736,967, Cl. 144-172.000.
Woolley, John Mathers: *See*—
Dodman, David; Pearson, Kenneth William; and Woolley, John Mathers, 3,737,445.
Worner, Gunter, to Daimler-Benz Aktiengesellschaft. Blocking synchronization for change-speed transmissions of motor vehicles. 3,737,016, Cl. 192-53.00f.
Wright, Richard R.: *See*—
Black, Herman Wendell; and Wright, Richard R., 3,737,195.
Wright, Roy L. Vertically adjustable shower head. 3,737,107, Cl. 239-588.000.
Wyde, Sidney S.: *See*—
Walker, Robert C.; and Wyde, Sidney S., 3,736,748.
Wygasch, Ewald. Method of drying and demercurizing hydrogen. 3,736,724, Cl. 55-29.000.
Xerox Corporation: *See*—
Roselli, Frank A., 3,737,221.
Snelling, Christopher; Little, William S.; and Townsend, Robert H., 3,737,310.
Snelling, Christopher, 3,737,569.
Wells, John B., 3,737,311.
Yabe, Shinichi; and Katsumata, Mitsuru, to Fuji Photo Film Co., Ltd. Device for automatically taking up a motion picture film. 3,737,113, Cl. 242-67.100.
Yabe, Shinichi; and Okada, Tomi, to Fuji Photofilm Co., Ltd. Heat-sensitive copying device. 3,737,662, Cl. 250-65.00t.
Yamada, Shigeki: *See*—
Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, 3,737,454.
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, to Matsushita Electric Industrial Co., Ltd. Solid-state magneto electrical transducer. 3,737,740, Cl. 317-235.00r.
Yamaguchi, Daizo. Method of making a polyvinyl acetal sponge buff. 3,737,398, Cl. 260-2.50f.
Yamaguchi, Tsutomu: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomu; and Gocho, Sinobu, 3,737,383.

Yamamoto, Kazumobu, to Fuji Xerox Co., Ltd. Platen driving device in an electrophotographic copying machine. 3,737,223, Cl. 355-8.000.
Yamamoto, Ken, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Mold for preparing a shaped article made of foamed thermoplastic resin. 3,737,266, Cl. 249-14.000.
Yamamoto, Masao: *See*—
Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, 3,737,454.
Yamashita, Akio: *See*—
Yamada, Tadashi; Yamashita, Akio; Tanaka, Masaru; Tsuzaki, Takehiro; and Fujita, Takashi, 3,737,740.
Yamashita, Nobuo, to Olympus Optical Company Limited. Wide angle camera lens system of retrofocus type. 3,737,213, Cl. 350-214.000.
Yamataka, Akira: *See*—
Nagano, Hiroshi; Tomioka, Hideo; Yamataka, Akira; and Yoshida, Hirohiko, 3,737,495.
Yamauchi Rubber Industry Co., Ltd.: *See*—
Tawa, Kan, 3,736,636.
Yamura, Ietoshi, to Mitsui Shipbuilding and Engineering Co., Ltd. Device for controlling list and level of pontoon. 3,736,898, Cl. 114-45.000.
Yanagisawa, Yuzuru, to Sony Corporation. Indicator tube utilizing a barrier electrode around each of the indicator units to which one of two voltages may be applied. 3,737,707, Cl. 313-109.500.
Yanaka, Takashi; and Shirota, Kohei, to Nihon Denshi Kabishiki Kaisha. Field of view adjusting device. 3,737,659, Cl. 250-49.50a.
Yando, Stephen; and Wagner, Gloria. Appliance and process for anil ornamentation. 3,736,946, Cl. 132-88.500.
Yang, Tung H.; and Branson, Theodore A., to Pullman Incorporated. Dual opening roof arrangement for covered hopper cars. 3,736,883, Cl. 105-377.000.
Yano, Kaoru: *See*—
Kaneko, Haruo; and Yano, Kaoru, 3,737,584.
Yates, Sidney, to Fothergill & Harvey, Limited. Means for severing of weft yarn during weaving. 3,736,965, Cl. 139-302.000.
Yazawa, Kimihiko: *See*—
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, 3,737,844.
Yeda Research and Development Co., Ltd.: *See*—
Berger, Gila; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,737,469.
Mazur, Yehuda; and Karger, Michael H., 3,737,447.
Yoda, Kenichi: *See*—
Suemasa, Hideo; Honda, Kazuyoshi; Yoda, Kenichi; and Hanahara, Toru, 3,737,732.
Yokoyama, Eisuke, to Kawaguchiko Seimitsu Kabushiki Kaisha. Cam operated retarded timer switch assembly with dashpot type air timer unit. 3,737,596, Cl. 200-34.000.
Yokoyama, Tohru; Kanda, Tetsuo; Oshio, Yudo; Hori, Yoshiro; and Yazawa, Kimihiko, to Chiyoda Kako Kensetsu Kabushiki Kaisha. Method for detecting small particles in a tank and an apparatus for carrying out the same. 3,737,844, Cl. 240-15.000.
Yoshida, Hirohiko: *See*—
Nagano, Hiroshi; Tomioka, Hideo; Yamataka, Akira; and Yoshida, Hirohiko, 3,737,495.
Yoshiko, Shinji: *See*—
Ando, Shoichi; and Yoshiko, Shinji, 3,737,660.
Yoshino, Takeo: *See*—
Kumasaka, Sadao; Suzuki, Satomi; Yoshino, Takeo; and Kobayashi, Tutomu, 3,737,400.
Yosioa, Tsunencbo: *See*—
Horiee, Koichi; Yosioa, Tsunencbo; and Machida, Tokuji, 3,737,554.
Yotsumoto, Kokichi, to Caterpillar Mitsubishi Ltd. Suction gas protective device in motor vehicle. 3,737,002, Cl. 180-69.00r.
Zaccagni, Richard F.: *See*—
Maloney, John E., Jr.; and Zaccagni, Richard F., 3,737,127.
Zach, Donald J.: *See*—
Hall, Garth O.; and Zach, Donald J., 3,737,197.
Zaffrann, Ralph D.: *See*—
Martens, Richard H.; and Zaffrann, Ralph D., 3,736,872.
Zamboni, Frank J., to Zamboni, Frank J., & Co. Water removal machine for artificial turf. 3,736,619, Cl. 15-340.000.
Zamboni, Frank J., & Co.: *See*—
Zamboni, Frank J., 3,736,619.
Zander, Richard L.; Ostwald, Erich; and Sides, Daniel H., to Black and Decker Manufacturing Company, The. Control collar and bearing support for power tool shaft. 3,736,992, Cl. 173-43.000.
Zeck, Richard C.: *See*—
Miller, Thomas F.; and Zeck, Richard C., 3,737,025.
Zeewy, Abraham. Flashing circuit. 3,737,731, Cl. 331-111.000.
Zeltex, Inc.: *See*—
Carney, Durland B., 3,737,729.
Zenack, Leslie D.: *See*—
Nocek, Stanley J.; Marko, Albert J.; and Zenack, Leslie D., 3,737,644.
Zenith Radio Corporation: *See*—
Buch, Roman; and Kocsis, Louis L., 3,737,793.
Frizane, Kenneth; and Trzyna, William A., 3,737,572.
Kessler, Lawrence W., 3,737,573.
Korpel, Adrianus, 3,737,785.
Ma, John Y.; and Zlotnick, Fredrick, 3,737,565.
Palac, Kazimir, 3,737,065.
Pierce, Richard L.; and Stafford, Herbert E., 3,737,206.
Zero Manufacturing Company: *See*—
Duncan, Leon L., 3,737,144.
Zeuner, Kenneth W., to Control Concepts Inc. Normally closed solenoid operated valve. 3,737,141, Cl. 251-129.000.
Ziffer, Jack, to Pabst Brewing Company. Non-dusting and moisture-resistant enzyme compositions. 3,737,376, Cl. 195-63.000.
Zimar, Frank: *See*—
Keck, Donald B.; Schultz, Peter C.; and Zimar, Frank, 3,737,292.
Zimmerle, Wilbur J.: *See*—
Fannin, Wayne V.; Gute, Loren R.; and Zimmerle, Wilbur J., 3,736,645.
Zinchenko, Vasily Ivanovich; Salmanova, Ljudmila Sergeevna; and Minchuk, Filipp Leontievich. Enzyme treatment of grape pulp for wine production. 3,737,324, Cl. 99-35.000.
Zlotnick, Fredrick: *See*—
Ma, John Y.; and Zlotnick, Fredrick, 3,737,565.
Zobel, Don William, to Motorola, Inc. Tachometer circuit. 3,737,773, Cl. 324-166.000.
Zoechling, Johann: *See*—
Petraschek, Ernst; Mick, Oskar; Kresta, Erich; Windbichler, Josef; and Zoechling, Johann, 3,736,972.
Zoecon Corporation: *See*—
Baum, John W., 3,737,442.
Henrick, Clive A.; and Siddall, John B., 3,737,450.
Monteiro, Hugo Jorge; and Siddall, John B., 3,737,452.
Zschauer, Karl-Heinz: *See*—
Heywang, Walter; Winstel, Guenter; and Zschauer, Karl-Heinz, 3,737,737.
Zurasky, James L., to Nnitee Stites of America, National Aeronautics and Space Administration. Monitoring deposition of films. 3,737,237, Cl. 356-161.000.
Zysset, K., & Co.: *See*—
Hartmann, Horst, 3,736,662.
999: *See*—
Wick, Richard; Bestenreiner, Friedrich; and Deml, Reinhold, 3,737,574.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF JUNE, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Combs, Robert L.: *See*—
Meyer, Max F., Jr., Combs, and Wooten. T911,005.
Meyer, Max F., Jr., Combs, and Wooten. T911,006.

Du Pont de Nemours, E. I., and Co.: *See*—
Himelreich, Louis E., Jr. T911,003.

Getsinger, John G. Nitrogen solutions and suspensions. T911,008, 6–5–73, Cl. 71—30.

Henry, James W. Magnetic torque transfer system. T911,002, 6–5–73, Cl. 259—108.

Himelreich, Louis E., Jr., to E. I. du Pont de Nemours and Co. Granulation slitter. T911,003, 6–5–73, Cl. 83—675.

Huber, J. M., Corp.: *See*—
Pugliese, Michael. T911,011.

Imperial Chemical Industries Ltd.: *See*—
Taylor, Ian C. T911,007.

Lewis, Howard M., and F. F. Schrum, Jr. Durable-press textiles of improved stain release. T911,001, 6–5–73, Cl. 8—115.6.

McKague, James F. Lithographic printing plate. T911,004, 6–5–73, Cl. 96—86.

Meyer, Max F., Jr., R. L. Combs, and W. C. Wooten, Jr. Poly-alpha-olefin polymers. T911,005, 6–5–73, Cl. 260—878.

Meyer, Max F., Jr., R. L. Combs, and W. C. Wooten, Jr. Polyethylene graft polymers. T911,006, 6–5–73, Cl. 260—878.

Perrin, John H., to United States of America, Health, Education and Welfare. Method for increasing the availability of drugs having high serum protein bound characteristics. T911,009, 6–5–73, Cl. 424—317.

Pugliese, Michael, to J. M. Huber Corp. De-inkable news ink compositions. T911,011, 6–5–73, Cl. 106—32.

Sakshaug, Eugene C., and E. W. Stetson. Spark gap assembly having arc-erosion resistant electrodes. T911,010, 6–5–73, Cl. 313—325.

Schrum, Forrest F., Jr.: *See*—
Lewis, Howard M., and Schrum. T911,001.

Stetson, Earl W.: *See*—
Sakshaug, Eugene C., and Stetson. T911,010.

Taylor, Ian C., to Imperial Chemical Industries Ltd. Aromatic polymers. T911,007, 6–5–73, Cl. 260—607.

United States of America, Health, Education and Welfare: *See*—
Perrin, John H. T911,009.

Wooten, Willis C., Jr.: *See*—
Meyer, Max F., Jr., Combs, and Wooten. T911,005.
Meyer, Max F., Jr., Combs, and Wooten. T911,006.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF JUNE, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Inc.: *See*—
Travis, Lawrence R. Re. 27,658.

Atkinson, James L., to North American Rockwell Corp. Electrostatic support. Re. 27,660, 6–5–73, Cl. 308—10.

Barnes, Theodore M.: *See*—
Soteropulos, Gust, and Barnes. Re. 27,657.

Bolduc, Lee R., G. F. Schwoboda, by Medtronic, Inc. Magnetically coupled implantable servomechanism. Re. 27,661, 6–5–73, Cl. 338—12.

Chapman, Frederick F., and D. Hill, to Ernest E. Runnion. Cutter-head structure. Re. 27,654, 6–5–73, Cl. 144—229.

Deere and Co.: *See*—
Soteropulos, Gust, and Barnes. Re. 27,657.

Ellison, Joseph E.: *See*—
Mongerson, Paul A., and Ellison. Re. 27,655.

Hill, Daniel: *See*—
Chapman, Frederick F., and Hill. Re. 27,654.

Medtronic, Inc.: *See*—
Bolduc, Lee R., and Schwoboda. Re. 27,661.

Miller, Lewis S., to Weyerhaeuser Co. Process of curing polymerizable resins having terminal vinyl ester groups using high energy electrons. Re. 27,656, 6–5–73, Cl. 117—93.31.

Mongerson, Paul A., and J. E. Ellison, to Stanadyne, Inc. Bathtub combination plumbing fixture. Re. 27,655, 6–5–73, Cl. 4—191.

North American Rockwell Corp.: *See*—
Atkinson, James L. Re. 27,660.

Reliance Electric Co.: *See*—
Wolfe, Robert L., and Trebnik. Re. 27,659.

Runnion, Ernest E.: *See*—
Chapman, Frederick F., and Hill. Re. 27,654.

Schwoboda, George F.: *See*—
Bolduc, Lee R., and Schwoboda. Re. 27,661.

Soteropulos, Gust, and T. M. Barnes, by Deere and Co. Bale thrower. Re. 27,657, 6–5–73, Cl. 214—42.

Stanadyne, Inc.: *See*—
Mongerson, Paul A., and Ellison. Re. 27,655.

Travis, Lawrence R., to AMP Inc. Flat cable process. Re. 27,658, 6–5–73, Cl. 29—624.

Trebnik, Augustine: *See*—
Wolfe, Robert L., and Trebnik. Re. 27,659.

Weyerhaeuser Co.: *See*—
Miller, Lewis S. Re. 27,656.

Wolfe, Robert L., and A. Trebnik, to Reliance Electric Co. Method for manufacturing an improved composite gear. Re. 27,659, 6–5–73, Cl. 29—159.2.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See*—
McGredy, Samuel, IV. 3,351.

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,353.
Jessel, Walter H., Jr., and Duffett. 3,354.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,353, 6–5–73, Cl. 79.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,354, 6–5–73, Cl. 80.

McGredy, Samuel, IV, to Armstrong Nurseries, Inc. Rose plant. 3,351, 6–5–73, Cl. 20.

Nurserymen's Exchange, Inc.: *See*—
Pearlstein, Carl. 3,352.

Pearlstein, Carl, to Nurserymen's Exchange, Inc. Azalea plant. 3,352, 6–5–73, Cl. 57.

Pinkerton, Robert E. Nectarine tree. 3,350, 6–5–73, Cl. 41.

Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,353.
Jessel, Walter H., Jr., and Duffett. 3,354.

LIST OF DESIGN PATENTEES

AMF Inc.: *See*—
Stewart, William R., and Griggs. 227,097.

Abbott, Robert J., Jr., to Owens-Illinois, Inc. Computer terminal. 227,115, 6–5–73, Cl. D26—5.

Abenoza, Esteban H., M. M., F., and L. C. Medallion. 227,124, 6–5–73, Cl. D29—19.

Abenoza, Fernando: *See*—
Abenoza, Esteban H., M. M., F., and L. C. 227,124.

Abenoza, Linda C.: *See*—
Abenoza, Esteban H., M. M., F., and L. C. 227,124.

Abenoza, Maria M.: *See*—
Abenoza, Esteban H., M. M., F., and L. C. 227,124.

Abildgaard Laboratories, Inc.: *See*—
Abildgaard, William H., Groswith, and Johnson. 227,195.
Abildgaard, William H., C. T. Groswith III, and L. W. Johnson, to Abildgaard Laboratories, Inc. Machine for binding books. 227,195, 6–5–73, Cl. D97—1.
Action-Lobeco, Imports, Ltd.: *See*—
Mayers, Edward M. 227,065.
Adams, Katie. Vehicle safety signal. 227,174, 6–5–73, Cl. D72—1.
Addressograph-Multigraph Corp.: *See*—
Maul, John A. 227,167.
Adler, James S.: *See*—
Dolby, John T., and Adler. 227,137.
Albanese, Aune F. Doll. 227,127, 6–5–73, Cl. D34—4.
Alexander, Fred C., to Universal-Rundle Corp. Shower stall. 227,102, 6–5–73, Cl. D23—57.
Alexander, James, to Scandia Packaging Machinery Co. Packaging container. 227,081, 6–5–73, Cl. D9—191.
Allen, Davis B., to The General Fireproofing Co. Cabinet. 227,059, 6–5–73, Cl. D6—159.
Allen, Davis B., to The General Fireproofing Co. Desk. 227,063, 6–5–73, Cl. D6—162.
Amerace Esna Corp.: *See*—
Heenan, Sidney A. 227,172.
American Home Products Corp.: *See*—
Kelly, Roger L. 227,132.
American Optical Corp.: *See*—
Shindler, Anthony. 227,163.
Shindler, Anthony. 227,164.
Anderson Bros. Mfg. Co.: *See*—
Anderson, John R., and Jacobson. 227,083.
Anderson, John R., and W. P. Jacobson, to Anderson Bros. Mfg. Co. Packaging container for liquids or the like. 227,083, 6–5–73, Cl. D9—219.
Arrow Tape Industries Inc.: *See*—
Finkel, Henry. 227,175.
Auditore, Salvatore, to G. Helleman Brewing Co. Inc. Bottle. 227,077, 6–5–73, Cl. D9—28.
Automata Corp.: *See*—
Rosen, Perry H., Seymour, and Sirois. 227,109.
Rosen, Perry H., Seymour, and Sirois. 227,111.
Baldwin, Claude M. Self audio monitor for speech therapy. 227,112, 6–5–73, Cl. D26—1.
Balow, Robert A., assignor of a fractional part interest to Francis D. Hurd. Spaghetti fork. 227,153, 6–5–73, Cl. D54—12.
Barrow, Harold A. Gun holster. 227,099, 6–5–73, Cl. D22—13.
Bateman, Robert F.: *See*—
Swett, James B., and Bateman. 227,142.
Becton, Dickinson and Co.: *See*—
Stevens, Frank W., and Han. 227,184.
Bereson, Arnold L., and M. F. Fuhrman, to Johnson & Johnson. Container for dental restoratives. 227,107, 6–5–73, Cl. D24—1.
Bernadotte, Sigvard, and T. Evrell. Knife. 227,071, 6–5–73, Cl. D8—99.
Block China Corp.: *See*—
Gulotta, Gerald. 227,133.
Gulotta, Gerald. 227,134.
Gulotta, Gerald. 227,141.
Borg-Warner Corp.: *See*—
Shiber, Samuel, and Hoppesch. 227,182.
Braun Aktiengesellschaft: *See*—
Rams, Dieter. 227,146.
Breger, Carl-Arne, to Telefonaktiebaget LM Ericsson. Stand for a telephone instrument. 227,117, 6–5–73, Cl. D26—14.
Briggs, Eugene C., and L. E. Reichel, to Koehring Co. Compactor. 227,166, 6–5–73, Cl. D60—1.
Brison, Robert L., to Whittaker Corp. Animal carrying case. 227,126, 6–5–73, Cl. D30—1.
Brodsky, David L., to Superior Plastic Products Co. Urine specimen kit. 227,180, 6–5–73, Cl. D83—1.
Brown, Warner K., and D. M. Lanci, to Clark Equipment Co. Control console for vehicle. 227,093, 6–5–73, Cl. D14—6.
Buhk, Randall P., Steelcase Inc. Chair. 227,057, 6–5–73, Cl. D6—30.
Burger Chef Systems, Inc.: *See*—
Duning, Roland L. 227,178.
Burris Mfg. Co.: *See*—
Lohmeyer, Hartmut. 227,054.
Burroughs, Frank, and R. Springer, to Optical Recognition Systems, Inc. Check reader. 227,113, 6–5–73, Cl. D26—5.
Callies, Fritz A., to Rex Chainbelt Inc. Bucket for a bucket elevator. 227,156, 6–5–73, Cl. D55—1.
Cape, Donald P., to Ekco Products, Inc. Meat handling tray or similar article. 227,191, 6–5–73, Cl. D87—1.
Carter, Howard B., to Rosedale Plastics (Containers) Ltd. Traffic marker. 227,173, 6–5–73, Cl. D72—1.
Chase, David O., and M. V. Maloney, to Houdaille Industries, Inc. Sump pump. 227,168, 6–5–73, Cl. D65—1.
Chiechi, Anthony W. Moisture injector-baster. 227,144, 6–5–73, Cl. D44—29.
Clark Equipment Co.: *See*—
Brown, Warner K., and Lanci. 227,093.
Clowe, Robert A., to Xerox Corp. Facsimile transceiver apparatus. 227,122, 6–5–73, Cl. D26—14.
Colorado Springs Machine Corp.: *See*—
Jones, Charles E. 227,096.
Columbus Dental Mfg. Co., The: *See*—
Ellies, Alan D., Hill, and Murray. 227,105.
Cookson, Cecil T., to O & R Engines, Inc. Engine. 227,177, 6–5–73, Cl. D77—1.
Corbisier, David L. Charm. 227,145, 6–5–73, Cl. D45—17.
Cramer, Harry E. and S. F. Portable airplane flight simulator trainer. 227,110, 6–5–73, Cl. D25—1.
Cramer, Steven F.: *See*—
Cramer, Harry E. and S. F. 227,110.
Cusenza, John. Hair straightening iron. 227,189, 6–5–73, Cl. D86—10.
Dangell, Kathi. Wig supporting and retaining stand. 227,186, 6–5–73, Cl. D86—10.
Daniel, Eugene T.: *See*—
Maurer, Donald J., and Daniel. 227,129.
Dart Industries Inc.: *See*—
Swett, James B., and Bateman. 227,142.
Davis, Paul, C. V. Eicholz, and B. N. Trombley, to Sweeth Plastics Inc. Mug. 227,135, 6–5–73, Cl. D44—9.
Deane, Edward V.: *See*—
Deane, Loryn B. and E. V. 227,149.
Deane, Loryn B. and E. V. Trash receptacle. 227,149, 6–5–73, Cl. D49—32.
Dembar, Robert H., to Graphicana Corp. Display holder for photographs or the like. 227,070, 6–5–73, Cl. D6—234.
Dentsply Research & Development Corp.: *See*—
Webb, Ronald C. 227,069.
Di Lorenzo, John. Skillet or similar article. 227,131, 6–5–73, Cl. D44—1.
Dolby, John T., and J. S. Adler, to Standard Oil Co. Plate. 227,137, 6–5–73, Cl. D44—10.
Double Sixteen Co.: *See*—
McKinsey, Kevin P., and Mills. 227,190.
Douglas, David. Serving dish or similar article. 227,140, 6–5–73, Cl. D44—15.
Duning, Roland L., to Burger Chef Systems, Inc. Cooking grill. 227,178, 6–5–73, Cl. D81—10.
Dunning, Fred R. Face guard for a helmet. 227,046, 6–5–73, Cl. D2—233.
Dunning, Fred R. Face guard for a helmet. 227,047, 6–5–73, Cl. D2—233.
Dynagraphic Merchandising Corp.: *See*—
Niven, Ronald D. 227,139.
Eicholtz, Clara V.: *See*—
Davis, Paul, Eicholtz, and Trombley. 227,135.
Ekco Products, Inc.: *See*—
Cape, Donald P. 227,191.
Ellies, Alan D., F. M. Hill, and J. H. Murray, to The Columbus Dental Mfg. Co. Dental laboratory mixing machine. 227,105, 6–5–73, Cl. D24—1.
Etna Products Co., Inc.: *See*—
Snyder, Jeffrey. 227,051.
Euclid Products Co., Inc., The: *See*—
Finke, Theodore R. 227,150.
Evrell, Torbjorn: *See*—
Bernadotte, Sigvard. 227,071.
Finke, Theodore R., to The Euclid Products Co., Inc. Collection box. 227,150, 6–5–73, Cl. D32—4.
Finkel, Henry, to Arrow Tape Industries Inc. Tape dispenser. 227,175, 6–5–73, Cl. D74—1.
Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 227,055, 6–5–73, Cl. D6—73.
Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 227,056, 6–5–73, Cl. D6—73.
Francis, John P. Retractable window case structure and support therefor. 227,088, 6–5–73, Cl. D13—1.
Franklin, Lester K. Desk stand. 227,176, 6–5–73, Cl. D74—5.
Fuhrman, Michael F.: *See*—
Bereson, Arnold L., and Fuhrman. 227,107.
Fujii, Kiyoshi., to Tokyo Shibaura Electric Co., Ltd. Electric washer. 227,147, 6–5–73, Cl. D9—1.
Fulton Industries, Inc.: *See*—
Grove, John L., and Shockey. 227,091.
Gallat, Paul N. Brochure stand. 227,064, 6–5–73, Cl. D6—184.
Gallat, Paul N. Brochure stand. 227,066, 6–5–73, Cl. D6—184.
General Electric Co.: *See*—
Kainass, Andrew. 227,119.
General Fireproofing Co., The: *See*—
Allen, Davis B. 227,059.
Allen, Davis B. 227,063.
Gillette Co., The: *See*—
Massey, John V., and Hutchcroft. 227,076.
Nigro, Louis V. 227,085.
Poisson, Norman D. 227,080.
Gladwin, Floyd R. Trash compactor cabinet. 227,155, 6–5–73, Cl. D55—1.
Godfrey, Donald V.: *See*—
Pavolko, Francis E., and Godfrey. 227,130.
Goldman, Lilit. Protective covering for boots. 227,048, 6–5–73, Cl. D2—278.
Gordon, Herman. Roll holder for dispensing sandpaper. 227,165, 6–5–73, Cl. D59—2.
Grafton, Jim R., G. E. Wilkins, and J. F. Murphy. Portable cooking grill. 227,179, 6–5–73, Cl. D81—10.
Graphicana Corp.: *See*—
Dembar, Robert H. 227,070.
Gremillion, Gerard S., and B. M. McMillin. Vehicle frame and backhoe. 227,092, 6–5–73, Cl. D14—3.
Griggs, Lonnie P.: *See*—
Stewart, William R., and Griggs. 227,097.
Groswith, Charles T., III: *See*—
Abildgaard, William H., Groswith, and Johnson. 227,195.
Grove, John L., and P. K. Shockey, to Fulton Industries, Inc. Mobile aerial work platform. 227,091, 6–5–73, Cl. D14—3.
Gulotta, Gerald, to Block China Corp. Cup. 227,133, 6–5–73, Cl. D44—9.
Gulotta, Gerald, to Block China Corp. Cup. 227,134, 6–5–73, Cl. D44—9.
Gulotta, Gerald, to Block China Corp. Plate. 227,141, 6–5–73, Cl. D44—15.
Hahn Laboratories, Inc.: *See*—
Kenner, Eloise M. 227,183.
Hampton Works (Stampings) Ltd., The: *See*—
Salt, Gordon. 227,075.
Han, Samuel D.: *See*—
Stevens, Frank W., and Han. 227,184.

Hanson, Alden B. and C. A., to Hanson Industries, Inc. Ski Boot. 227,160, 6–5–73, Cl. D2—276.

Hanson, Chris A.: *See*—
Hanson, Alden B. and C. A. 227,160.

Hanson Industries Inc.: *See*—
Hanson, Alden B. and C. A. 227,160.

Harris, W. J., (Birmingham) Ltd.: *See*—
Welch, Robert. 227,151.

Harrison, Larry D., to Xerox Corp. Facsimile transceiver apparatus. 227,121, 6–5–73, Cl. D26—14.

Hartman, Raymond. Boot jack. 227,188, 6–5–73, Cl. D86—10.

Hata, Kotaro, S. Morita, S. Kubota, K. Kagayama, and T. Yaso, to Matsushita Electric Industrial Co., Ltd. Velocipede. 227,128, 6–5–73, Cl. D34—15.

Haynes, Julian R., to Sunbeam Corp. Coffeemaker. 227,143, 6–5–73, Cl. D44—26.

Heenan, Sidney A., to Amerace Esna Corp. Combined reflector and lens. 227,172, 6–5–73, Cl. D72—1.

Heilman, G., Brewing Co. Inc.: *See*—
Auditore, Salvatore. 227,077.

Hill, Frederick M.: *See*—
Ellies, Alan D., Hill, and Murray. 227,105.

Hoover Ball and Bearing Co.: *See*—
Platte, Richard L. 227,078.

Hoppesch, Joseph P.: *See*—
Shiber, Samuel, and Hoppesch. 227,182.

Horiguchi, Mineo: *See*—
Noma, Seiya, Yamasaki, Yoshida, Orito, and Horiguchi. 227,090.

Houdaille Industries, Inc.: *See*—
Chase, David O., and Maloney. 227,168.

Hurd, Francis D.: *See*—
Balow, Robert A. 227,153.

Hutchcroft, Robert J.: *See*—
Massey, John V., and Hutchcroft. 227,076.

Hyer Hardware Mfg. Co.: *See*—
James, David F. 227,078.
James, David F. 227,074.

Ihasz, Richard, to Sperry Rand Corp. Callous remover. 227,187, 6–5–73, Cl. D86—10.

Ikeya, Shinji, and H. Natsume, to Sanyo Electric Co., Ltd. Combined television and radio receiver. 227,159, 6–5–73, Cl. D56—4.

Inatomi, Charles T., to TRW Data Systems, Inc. Computer terminal or the like. 227,114, 6–5–73, Cl. D26—5.

International Harvester Co.: *See*—
Skyer, Robert A., Kolak, Wilson, and Konefes. 227,094.

Iseki Agricultural Machinery Mfg. Co. Ltd.: *See*—
Noma, Seiya, Yamasaki, Yoshida, Orito, and Horiguchi. 227,090.

Ivac Corp.: *See*—
Sato, Stephens N. 227,123.

JG Furniture Co. Inc.: *See*—
Nance, John. 227,062.

Jackson Chair Co., Inc.: *See*—
Fisher, Morris F. 227,055.
Fisher, Morris F. 227,056.

Jacobson, William P.: *See*—
Anderson, John R., and Jacobson. 227,083.

James, David F., to Hyer Hardware Mfg. Co. Handle for doors, drawers, and the like. 227,073, 6–5–73, Cl. D8—166.

James, David F., to Hyer Hardware Mfg. Co. Pull handle for doors, drawers, and the like. 227,074, 6–5–73, Cl. D8—166.

Jensen, Gerald A.: *See*—
Kelch, David J., and Jensen. 227,095.

Jiranek, Leo A., to The Magnavox Co. Dresser or the like. 227,060, 6–5–73, Cl. D6—160.

Jobbins, Howell S., Jr., to Universal Optical Co., Inc. Eyeglass frame front. 227,161, 6–5–73, Cl. D57—1.

Jobbins, Howell S., Jr. Eye-glass frame front. 227,162, 6–5–73, Cl. D57—1.

Johnson, John R., to Thos. Storey (Engineers) Ltd. Panel member for a pre-fabricated bridge. 227,086, 6–5–73, Cl. D13—1.

Johnson & Johnson: *See*—
Bereson, Arnold L., and Fuhrman. 227,107.

Johnson, Logan W.: *See*—
Abildgaard, William H., Groswith, and Johnson. 227,195.

Johnson, Peter L., to Warner-Lambert Co. Double tubing unit for a water cooled dental impression tray. 227,104, 6–5–73, Cl. D24—1.

Jones, Charles E., to Colorado Springs Machine Corp. Sling shot. 227,096, 6–5–73, Cl. D22—4.

Kainass, Andrew, to General Electric Co. Cassette tape recorder. 227,119, 6–5–73, Cl. D26—14.3.

Kamlukin, Igor, N. Rhoades, M. Colloton, and W. L. Stevenson, to Simplicity Mfg. Co., Inc. Tractor. 227,089, 6–5–73, Cl. D14—3.

Karlsen, Kjell. Packaging tray. 227,084, 6–5–73, Cl. D9—242.

Kelch, David J., and G. A. Jensen, to The Mead Corp. Process controller. 227,095, 6–5–73, Cl. D16—2.

Kelly, Roger L., to American Home Products Corp. Pan for cooking bacon. 227,132, 6–5–73, Cl. D44—1.

Kenner, Eloise M., to Hahn Laboratories, Inc. Electric douche. 227,183, 6–5–73, Cl. D83—1.

Kies, Adolf. Goblet. 227,136, 6–5–73, Cl. D44—9.

Koehring Co.: *See*—
Briggs, Eugene C., and Reichel. 227,166.

Kolak, Mitchell E.: *See*—
Skyer, Robert A., Kolak, Wilson, and Konefes. 227,094.

Konefes, Joseph H.: *See*—
Skyer, Robert A., Kolak, Wilson, and Konefes. 227,084.

Lanci, Dennis M.: *See*—
Brown, Warner K., and Lanci. 227,093.

Larrabee, Floyd H. Climbing iron. 227,049, 6–5–73, Cl. D2—317.

Lea, Melvin A., to Oneida Ltd. Spoon or similar article. 227,152, 6–5–73, Cl. D54—12.

Lippert, Wayne M. and W. L. Lavatory basin. 227,103, 6–5–73, Cl. D23—58.

Lippert, William L.: *See*—
Lippert, Wayne M. and W. L. 227,103.

Lohmeyer, Hartmut, to Burris Mfg. Co. Chair or similar article. 227,054, 6–5–73, Cl. D6—66.

Lustig, David. Barrel or the like. 227,079, 6–5–73, Cl. D9—170.

MacManus, John. Forcing bag for decorating pastry and the like. 227,082, 6–5–73, Cl. D9—194.

Magnavox Co., The: *See*—
Jiranek, Leo A. 227,060.

Maina, Neil J. Table. 227,058, 6–5–73, Cl. D6—149.

Maloney, Martin V.: *See*—
Chase, David O. and Maloney. 227,168.

Manderfield, Ellen B. Spoon or similar article. 227,154, 6–5–73, Cl. D54—12.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Sewing machine. 227,169, 6–5–73, Cl. D70—1.

Marx, Louis, & Co. Inc.: *See*—
Pavolko, Francis E., and Godfrey. 227,130.

Massey, John V., and R. J. Hutchcroft, to The Gillette Co. Combined bottle and display container therefor. 227,076, 6–5–73, Cl. D9—12.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hata, Kotaro, Morita, Kubota, Kagayama, and Yaso. 227,128.
Okabe, Ken, and Yazawa. 227,158.

Maul, John A., to Addressograph-Multigraph Corp. Data recorder. 227,167, 6–5–73, Cl. D64—11.

Maurer, Donald J., and E. T. Daniel, to Monogram Models, Inc. Toy motorcycle. 227,129, 6–5–73, Cl. D34—15.

Mayers, Edward M., to Action-Lobeco, Imports, Ltd. Book rack. 227,065, 6–5–73, Cl. D6—184.

McKinsey, Kevin P., and T. C. Mills, to Double Sixteen Co. Container for tape cassettes. 227,190, 6–5–73, Cl. D87—1.

McMillin, Bert M.: *See*—
Gremillion, Gerard S., and McMillin. 227,092.

Mead Corp., The: *See*—
Kelch, David J., and Jensen. 227,095.

Mills, Thomas C.: *See*—
McKinsey, Kevin P., and Mills. 227,190.

Minners and Co., Inc.: *See*—
Minners, Robert W. 227,185.

Minners, Robert W., to Minners and Co., Inc. Ash tray. 227,185, 6–5–73, Cl. D85—2.

Monogram Models, Inc.: *See*—
Maurer, Donald J., and Daniel. 227,129.

Morita, Sigeru: *See*—
Hata, Kotaro, Morita, Kubota, Kagayama, and Yaso. 227,128.

Muraoka, Hiroshi, to Pioneer Electronic Corp. Magnetic head for tape recorders. 227,118, 6–5–73, Cl. D26—14.

Murphy, Joseph F.: *See*—
Grafton, Jim R., Wilkins, and Murphy. 227,179.

Murray, James H.: *See*—
Ellies, Alan D., Hill, and Murray. 227,105.

Nance, John, to JG Furniture Co. Inc. Modular desk unit. 227,062, 6–5–73, Cl. D6—162.

Natsume, Hiromitsu: *See*—
Ikeya, Shinji, and Natsume. 227,159.

Nigro, Louis V., to The Gillette Co. Dispenser cap for a pressurized container. 227,085, 6–5–73, Cl. D9—258.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Webb, Ronald C., and Wikel. 227,106.

Niven, Ronald D., to Dynagraphic Merchandising Corp. Serving tray for hamburgers or the like. 227,139, 6–5–73, Cl. D44—10.

Noma, Seiya, T. Yamasaki, K. Yoshida N. Orito, and M. Horiguchi, to Iseki Agricultural Machinery Mfg. Co. Ltd. Tractor. 227,090, 6–5–73, Cl. D14—3.

O & R Engines, Inc.: *See*—
Cookson, Cecil T. 227,177.

Oas, David B. Combined scrub pail and mop squeezer. 227,148, 6–5–73, Cl. D49—29.

Okabe, Ken, and H. Yazawa, to Matsushita Electric Industrial Co., Ltd. Radio-phonograph or similar article. 227,158, 6–5–73, Cl. D56—4.

Oneida Ltd.: *See*—
Lea, Melvin A. 227,152.

Optical Recognition Systems, Inc.: *See*—
Burroughs, Frank, and Springer. 227,113.

Owens-Illinois, Inc.: *See*—
Abbott, Robert J., Jr. 227,115.

P. X. Industries, Inc.: *See*—
Palson, Richard C. J. 227,072.

Palmer, Donald M. Tag holder. 227,194, 6–5–73, Cl. D8—243.

Palson, Richard C. J., to P. X. Industries, Inc. Cabinet pull. 227,072, 6–5–73, Cl. D8—166.

Papvasiliou, Elaine J., to Symbologics, Inc. Medallion. 227,125, 6–5–73, Cl. D29—19.

Pavolko, Francis E., and D. V. Godfrey, to Louis Marx & Co. Inc. Child's riding vehicle. 227,130, 6–5–73, Cl. D34—15.

Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 227,193, 6–5–73, Cl. D90—9.

Pelensky, Walter J. Stringed musical instrument. 227,157, 6–5–73, Cl. D56—1.

Pioneer Electronic Corp.: *See*—
Muraoka, Hiroshi. 227,118.

Platte, Richard L., to Hoover Ball and Bearing Co. Jug. 227,078, 6–5–73, Cl. D9—40.

Poisson, Norman D., to The Gillette Co. Razor case. 227,080, 6–5–73, Cl. D9—186.

Primault, Andre, to Societe Generale de Fonderie Societe Anonyme. Bathtub. 227,101, 6–5–73, Cl. D23—55.

R/Design Consultants, Inc.: *See*—
Sandy, Hal D. 227,068.
Rams, Dieter, to Braun Aktiengesellschaft. Table lighter. 227,146, 6–5–73, Cl. D48—27.
Reichel, Lee E.: *See*—
Briggs, Eugene C., and Reichel. 227,166.
Rex Chainbelt Inc.: *See*—
Callies, Fritz A. 227,156.
Rhoades, Nolan: *See*—
Kamlukin, Igor, Rhoades, Colloton, and Stevenson. 227,089.
Ris, Gunter F., to Rosenthal Aktiengesellschaft. Chair. 227,053, 6–5–73, Cl. D6—26.
Rosedale Plastics (Containers) Ltd.: *See*—
Carter, Howard B. 227,173.
Rosen, Perry H., R. E. Seymour, and W. J. Sirois, to Automata Corp. Housing for an electronic test scoring machine. 227,111, 6–5–73, Cl. D25—1.
Rosen, Perry H., R. E. Seymour, and W. J. Sirois, to Automata Corp. Upper housing for a test scoring machine. 227,109, 6–5–73, Cl. D25—1.
Rosenthal Aktiengesellschaft: *See*—
Ris, Gunter F. 227,053.
S.p.A. Virginio Rimoldi & C.: *See*—
Marforio, Nerino. 227,169.
Salt, Gordon, to The Hampton Works (Stampings) Ltd. Tent pole connector. 227,075, 6–5–73, Cl. D8—236.
Sandy, Hal D., to R/Design Consultants, Inc. Display rack. 227,068, 6–5–73, Cl. D6—190.
Sanyo Electric Co., Ltd.: *See*—
Ikeya, Shinji, and Natsume. 227,159.
Sato, Kuzuhisa, to Sony Corp. Speaker box. 227,116, 6–5–73, Cl. D26—14.
Sato, Stephens N., to Ivac Corp. Battery charger. 227,123, 6–5–73, Cl. D26—15.
Scandia Packaging Machinery Co.: *See*—
Alexander, James. 227,081.
Schafhauser, Herman J. Key holder. 227,192, 6–5–73, Cl. D87—8.
Schneider, Wilfried. Multi-directional speaker. 227,120, 6–5–73, Cl. D26—14.
Seymour, Roy E.: *See*—
Rosen, Perry H., Seymour, and Sirois. 227,109.
Rosen, Perry H., Seymour, and Sirois. 227,111.
Shaw, Bernard E. Stretcher barrier. 227,181, 6–5–73, Cl. D83—1.
Shiber, Samuel, and J. P. Hoppesch, to Borg-Warner Corp. Breath input unit for a breath tester. 227,182, 6–5–73, Cl. D83—1.
Shindler, Anthony, to American Optical Corp. Pair of spectacles. 227,163, 6–5–73, Cl. D57—1.
Shindler, Anthony, to American Optical Corp. Pair of spectacles. 227,164, 6–5–73, Cl. D57—1.
Shockey, Paul K.: *See*—
Grove, John L., and Shockey. 227,091.
Simplicity Mfg. Co., Inc.: *See*—
Kamlukin, Igor, Rhoades, Colloton, and Stevenson. 227,089.
Sirois, Walter J.: *See*—
Rosen, Perry H., Seymour, and Sirois. 227,109.
Rosen, Perry H., Seymour, and Sirois. 227,111.
Skyer, Robert A., M. E. Kolak, H. R. Wilson, and J. H. Konefes, to International Harvester Co. Tractor grill housing or similar article. 227,094, 6–5–73, Cl. D14—18.
Slater, Jame A. Display stand. 227,050, 6–5–73, Cl. D6—20.
Slater, James A. Display stand. 227,052, 6–5–73, Cl. D6—20.
Snyder, Jeffrey, to Etna Products Co., Inc. Display stand for pictures or the like. 227,051, 6–5–73, Cl. D6—20.
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Sobczak, Sigmar E. Desk or similar article. 227,061, 6–5–73, Cl. D6—161.
Societe Generale de Fonderie Societe Anonyme: *See*—
Primault, Andre. 227,101.
Sony Corp.: *See*—
Sato, Kazuhisa. 227,116.
Sperry Rand Corp.: *See*—
Ihasz, Richard. 227,187.
Spoo, Guy C. Sheet metal panel. 227,087, 6–5–73, Cl. D13—1.
Springer, Robert: *See*—
Burroughs, Frank, and Springer. 227,113.
Standard Oil Co.: *See*—
Dolby, John T., and Adler. 227,137.
Steelcase Inc.: *See*—
Buhk, Randall P. 227,057.
Stevens, Frank W., and S. D. Han, to Becton, Dickinson and Co. Pediatric urinary drainage bag or similar article. 227,184, 6–5–73, Cl. D83—1.
Stevenson, William L.: *See*—
Kamlukin, Igor, Rhoades, Colloton, and Stevenson. 227,089.
Stewart, William R., and L. P. Griggs, to AMF Inc. Archery bow handle. 227,097, 6–5–73, Cl. D22—5.
Storey, Thos., (Engineers) Ltd.: *See*—
Johnson, John R. 227,086.
Sullivan, James H., to Union Special Machine Co. Sewing machine. 227,170, 6–5–73, Cl. D70—1.
Sunbeam Corp.: *See*—
Haynes, Julian R. 227,143.
Superior Plastic Products Co.: *See*—
Brodsky, David L. 227,180.
Sweeth Plastics Inc.: *See*—
Davis, Paul, Eicholtz, and Trombley. 227,135.
Swett, James B., and R. F. Bateman, to Dart Industries Inc. Pitcher or the like. 227,142, 6–5–73, Cl. D44—21.
Symbologics, Inc.: *See*—
Papavasiliou, Elaine J. 227,125.
TRW Data Systems, Inc.: *See*—
Inatomi, Charles T. 227,114.
Telefonaktiebaget LM Ericsson: *See*—
Breger, Carl-Arne. 227,117.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Fujii, Kiyoshi. 227,147.
Trombley, Bertrand N.: *See*—
Davis, Paul, Eicholtz, and Trombley. 227,135.
Union Special Machine Co.: *See*—
Sullivan, James H. 227,170.
Universal Optical Co., Inc.: *See*—
Jobbins, Howell S., Jr. 227,161.
Universal-Rundle Corp.: *See*—
Alexander, Fred C. 227,102.
Volume Shoe Corp.: *See*—
Young, Robert C., Jr. 227,067.
Wald Mfg. Co., Inc.: *See*—
Pawsat, Carlton P. 227,193.
Warner-Lambert Co.: *See*—
Johnson, Peter L. 227,104.
Webb, Ronald C., to Dentsply Research & Development Corp. Combined tray and pivotal arm support therefor. 227,069, 6–5–73, Cl. D6—194.
Webb, Ronald C., and K. B. Wikel, to Nippon Gakki Seizo Kabushiki Kaisha. Dental operatory. 227,106, 6–5–73, Cl. D24—1.
Weiss, Harold H. Bathtub. 227,100, 6–5–73, Cl. D23—55.
Welch, Robert, to W. J. Harris (Birmingham) Ltd. Drawing compass. 227,151, 6–5–73, Cl. D52—6.
Wheeler, Raymond L. Air cushion vehicle. 227,171, 6–5–73, Cl. D71—1.
Whittaker Corp.: *See*—
Brison, Robert L. 227,126.
Wikel, Kenneth B.: *See*—
Webb, Ronald C., and Wikel. 227,106.
Wilkins, Glenn E.: *See*—
Grafton, Jim R., Wilkins, and Murphy. 227,179.
Wilson, Jack K., N. E., and R. S. Bow handle. 227,098, 6–5–73, Cl. D22—5.
Wilson, Norman E.: *See*—
Wilson, Jack K., N. E., and R. S. 227,098.
Wilson, Robert S.: *See*—
Wilson, Jack K., N. E., and R. S. 227,098.
Xerox Corp.: *See*—
Clowe, Robert A. 227,122.
Harrison, Larry D. 227,121.
Yamasaki, Toshikado: *See*—
Noma, Seiya, Yamasaki, Yoshida, Orito, and Horiguchi. 227,090.
Yaso, Tsunemitsu: *See*—
Hata, Kotaro, Morita, Kubota, Kagayama, and Yaso. 227,128.
Yazawa, Hiroaki: *See*—
Okabe, Ken, and Yazawa. 227,158.
Young, Robert C., Jr., to Volume Shoe Corp. Display rack for merchandise. 227,067, 6–5–73, Cl. D6—186.

CLASSIFICATION OF PATENTS

ISSUED JUNE 5, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 3,736,595
74 3,736,596
111 3,736,597

CLASS 3
1 3,736,598

CLASS 4
172.19 3,736,599
191 Re.27,655
231 3,736,600

CLASS 5
9R 3,736,601
176R 3,736,602
317R 3,736,603
348WB 3,736,604
3,736,605

CLASS 7
14.1R 3,736,606

CLASS 8
183 3,737,284

CLASS 9
2A 3,736,607
6 3,736,608
310A 3,736,609
342 3,736,610

CLASS 12
54.2 3,736,611
142D 3,736,613
142P 3,736,612

CLASS 13
25 3,737,553
33 3,737,554

CLASS 15
97R 3,736,614
104.1C 3,736,615
210R 3,736,616
250.22 3,736,617
306A 3,736,618
340 3,736,619

CLASS 16
87.4R 3,736,620
116 3,736,621

CLASS 17
24 3,736,622
25 3,736,623

CLASS 19
80R 3,736,624
159R 3,736,625
295 3,736,626

CLASS 23
277C 3,737,286
277R 3,737,285
281 3,737,287
285 3,737,288

CLASS 24
23W 3,736,627
205.1 3,736,628
248SA 3,736,629

CLASS 29
24.5 3,736,631
25.2 3,736,630
25.35 3,736,632
90R 3,736,633
103A 3,736,634
116AD 3,736,636
149.5B 3,736,635
155R 3,736,637
156.5A 3,736,639
156.8 3,736,638
157.1R 3,736,640
159.2 Re.27,659
163.5F 3,736,641
182.7 3,737,289
3,737,290
204 3,736,642
267 3,736,643
268 3,736,644
422 3,736,645
428 3,736,651
429 3,736,652
458 3,736,646
470 3,736,647
470.1 3,736,654
473.1 3,736,648
3,736,649
3,736,650
496 3,736,653
592 3,736,655
599 3,736,656
603 3,736,657
624 Re.27,658
631 3,736,658

CLASS 30
4R 3,736,659
6.4 3,736,660
192 3,736,661
283 3,736,662

CLASS 32
17 3,736,663

CLASS 33
169R 3,736,665
174TC 3,736,666

CLASS 34
48 3,736,667
60 3,736,668
218 3,736,670
229 3,736,669

CLASS 35
9C 3,736,671
35A 3,736,672

CLASS 36
44 3,736,673

CLASS 37
2R 3,736,882
43R 3,736,674
141R 3,736,664
3,736,675
142R 3,736,676
195 3,736,677

CLASS 38
139 3,736,679
143 3,736,678

CLASS 40
105.5 3,736,680
109 3,736,681
125H 3,736,682
126B 3,736,683
152 3,736,684
158 3,736,685

CLASS 42
6 3,736,686
16 3,736,687
78 3,736,693

CLASS 43
3 3,736,688
43.14 3,736,690
44.8 3,736,691
77 3,736,689
3,736,692

CLASS 46
7 3,736,694
12 3,736,695
17 3,736,696
3,736,697
41 3,736,698
93 3,736,699
206 3,736,700

CLASS 48
214 3,737,291

CLASS 49
44 3,736,701
362 3,736,702

CLASS 51
165.78 3,736,704
165.8 3,736,703
168 3,736,705

CLASS 52
28 3,736,706
65 3,736,707
92 3,736,708
97 3,736,709
115 3,736,710
149 3,736,711
167 3,736,712
221 3,736,713
300 3,736,714
309 3,736,715
334 3,736,716
476 3,736,717
677 3,736,719
720 3,736,718
741 3,736,720

CLASS 53
22A 3,736,721
124E 3,736,722
180 3,736,723

CLASS 55
29 3,736,724
32 3,736,725
73 3,736,726
103 3,736,727
341 3,736,728

CLASS 56
10 3,736,729
10.9 3,736,732
13.6 3,736,735
14.5 3,736,736
63 3,736,730
3,736,731
98 3,736,733
119 3,736,734
208 3,736,737
330 3,736,738

CLASS 57
13 3,736,739

CLASS 58
23BA 3,736,741
23D 3,736,740
50A 3,736,742
109 3,736,743

CLASS 60
6 3,736,744
13 3,736,752
39.02 3,736,745
39.36 3,736,746
39.65 3,736,747
39.66 3,737,152
39.67 3,736,748
39.74A 3,736,749
226A 3,736,750
262 3,736,751
489 3,736,753

CLASS 61
.5 3,736,754
12 3,736,755
36R 3,736,758
46.5 3,736,756
53.64 3,736,757
54 3,736,759
72.1 3,736,760

CLASS 62
6 3,736,761
13 3,736,762
85 3,736,763
89 3,736,764
127 3,736,765
137 3,736,766
349 3,736,767
455 3,736,768
530 3,736,769

CLASS 63
15.7 3,736,770

CLASS 64
23.5 3,736,771

CLASS 65
3 3,737,292
3,737,293
33 3,737,294
99A 3,737,295
159 3,737,296
273 3,737,297

CLASS 68
12R 3,736,772
17A 3,736,773
18R 3,736,774
23 3,736,775

CLASS 69
13 3,736,776

CLASS 70
63 3,736,777
70 3,736,778
276 3,736,779
453 3,736,780
456R 3,736,781

CLASS 71
77 3,737,298
94 3,737,299

CLASS 72
8 3,736,782
57 3,736,783
145 3,736,784
238 3,736,785
255 3,736,786
385 3,736,787
402 3,736,788

CLASS 73
1B 3,736,789
1E 3,736,791
27R 3,736,792
37 3,736,790
38 3,736,793
102 3,736,794
141A 3,736,795
178T 3,736,796
194EM 3,736,798
213 3,736,797

CLASS 74
3.52 3,736,799
89 3,736,801
89.15 3,736,802
192 3,736,803
230.17C 3,736,804
237 3,736,805
336 3,736,806
410 3,736,807
469 3,736,808
483PB 3,736,809
491 3,736,800
3,736,810
573 3,736,811
606A 3,736,812
740 3,736,813
3,736,814
759 3,736,815

CLASS 75
.5BA 3,737,301
.5BC 3,737,300
10 3,737,302
68R 3,737,303
3,737,304
3,737,305
101R 3,737,306
109 3,737,307
124 3,737,308
172R 3,737,309

CLASS 81
3R 3,736,816
3.1C 3,736,817

CLASS 82
1R 3,736,818
2.5 3,736,819

CLASS 83
4 3,736,820
76 3,736,821
126 3,736,827
155 3,736,822
165 3,736,823
167 3,736,824
174 3,736,825
600 3,736,826
661 3,736,828
788 3,736,829

CLASS 84
1.25 3,737,555
285 3,736,830
434 3,736,831
464 3,736,832
473 3,736,833

CLASS 85
7 3,736,834

CLASS 86
19 3,736,835

CLASS 89
1.814 3,736,836
28R 3,736,837
36A 3,736,838
128 3,736,839

CLASS 90
58B 3,736,840
62R 3,736,841

CLASS 91
1 3,736,842
234 3,736,843
390 3,736,845

CLASS 92
24 3,736,844

CLASS 93
82 3,736,846

CLASS 95
1R 3,736,848
1.1 3,736,849
3,736,850
3,736,856
4.5 3,736,855
10CT 3,736,851
10C 3,736,852
11.5R 3,736,853
12 3,736,857
31PM 3,736,854

CLASS 96
1R 3,737,310
3,737,311
4 3,737,312
27R 3,737,313
36.3 3,737,314
56.6 3,737,316
74 3,737,317
76C 3,737,315
100 3,737,318
115P 3,737,320
115R 3,737,319
116 3,737,321

CLASS 98
40C 3,736,858

CLASS 99
23 3,737,322
31 3,737,223
3,737,323
35 3,737,324
3,737,325
78 3,737,326
91 3,737,327
134R 3,737,328
175 3,737,329
215 3,737,330
331 3,736,859
339 3,736,860
343 3,736,861
353 3,736,862

CLASS 100
45 3,736,863
53 3,736,864
98R 3,736,865
189 3,736,866

CLASS 101
45 3,736,867
93C 3,736,868
153 3,736,869
329 3,736,870
456 3,736,871
462 3,736,872
467 3,736,873

CLASS 102
2 3,736,874
24HC 3,736,875
32 3,736,876
35 3,736,877
90 3,736,878

CLASS 104
12 3,736,879
148LM 3,736,881
148MS 3,736,880

CLASS 105
377 3,736,883

CLASS 106
71 3,737,332
73.2 3,737,331
288B 3,737,333
288Q 3,737,334

CLASS 107
.5A 3,737,004

CLASS 108
48 3,736,884
58 3,736,885

CLASS 110
7R 3,736,886
8A 3,736,888
8R 3,736,887

CLASS 111
1 3,736,889
7 3,736,890

CLASS 112
79R 3,736,891
141 3,736,892
203 3,736,894
3,736,895

CLASS 113
1K 3,736,896
120Y 3,736,893

CLASS 114
.5 3,736,897
45 3,736,898

CLASS 116
70 3,736,899
3,736,900

CLASS 117
72 3,737,335
75 3,737,336
93.31 Re.27,656
100 3,737,337
102L 3,737,338
212 3,737,339
3,737,340
3,737,341
217 3,737,342
227 3,737,343

CLASS 118
2 3,736,901
50 3,736,902
218 3,736,903
505 3,736,904

CLASS 119
51 3,736,905
105 3,736,906

CLASS 122
2 3,736,907
4D 3,736,908
390 3,736,909

CLASS 123
32EA 3,736,910
65VA 3,736,911
140MP 3,736,912
148E 3,736,913
3,736,914
198DC 3,736,915

CLASS 126
198 3,736,916
389 3,736,917

CLASS 128
2.05F 3,736,918
17 3,736,919
33 3,736,920
56 3,736,921
66 3,736,922
3,736,923
3,736,924
3,736,992
76B 3,736,925
133 3,736,926
145.6 3,736,927
146.2 3,736,928
152 3,736,929
214E 3,736,930
216 3,736,933
218R 3,736,932
283 3,736,934
290R 3,736,931
296 3,736,935
303.1 3,736,936
3,736,937
305 3,736,938
349B 3,736,939
418 3,737,579

CLASS 131
4A 3,736,940
21R 3,736,941
22R 3,736,942
235R 3,736,943

CLASS 132
7 3,736,944
9 3,736,945
88.5 3,736,946

CLASS 133
8R 3,736,947

CLASS 134
93 3,736,948

CLASS 136
120FC 3,737,344
238 3,737,345

CLASS 137
102 3,736,949
202 3,736,950
217 3,736,951
355.28 3,736,952
430 3,736,953
525 3,736,954
561 3,736,955
582 3,736,956
604 3,736,957
625.17 3,736,959
625.6 3,736,958
3,736,960

CLASS 138
38 3,736,961

CLASS 139
85 3,736,962
122H 3,736,964
122R 3,736,963
302 3,736,965

CLASS 141
392 3,736,966

CLASS 144
172 3,736,967
229 Re.27,654
312 3,736,968

CLASS 148
1.5 3,737,346
175 3,737,347

CLASS 149
2 3,737,348
17 3,737,350
89 3,737,349

CLASS 151
41.73 3,736,969

CLASS 152
226 3,736,970
353 3,736,971
354 3,736,972
3,736,973
362R 3,736,974

CLASS 156
62.2 3,737,351
181 3,737,352
190 3,737,353
229 3,737,354
293 3,737,355
402 3,737,356
495 3,737,357
502 3,737,358
522 3,737,359
577 3,737,360
580 3,737,361
3,737,362
584 3,737,363

CLASS 157
1.1 3,736,975

CLASS 160
70 3,736,976

CLASS 161
36 3,737,364
41 3,737,365
48 3,737,366
109 3,737,367
123 3,737,368

CLASS 162
95 3,737,369
175 3,737,370
181B 3,737,371

CLASS 164
14 3,736,977
187 3,736,978
281 3,736,979
283 3,736,980

CLASS 165
2 3,736,981

CLASS 166
55 3,736,982
208 3,736,984
313 3,736,983

CLASS 169
31P 3,736,985
31R 3,736,986

CLASS 172
4.5 3,736,987
7 3,736,988
131 3,736,990
759 3,736,989

CLASS 173
29 3,736,991
163 3,736,993

CLASS 174
19 3,737,556
23R 3,737,557
86 3,737,558
138F 3,737,559
158R 3,737,560

CLASS 175
103 3,736,994
330 3,736,995
392 3,736,996

CLASS 176
19R 3,737,372
37 3,737,373

CLASS 177
145 3,736,997
187 3,736,998
208 3,736,999

CLASS 178
5.2 3,737,574
5.4R 3,737,561
3,737,562
3,737,563
3,737,564
5.8R 3,737,566
5.8 3,737,565
6.5 3,737,567
6.6A 3,737,568
7.1 3,737,569
7.2 3,737,570
3,737,571
7.3R 3,737,572
7.5D 3,737,573
7.6 3,737,575
23A 3,737,577
67 3,737,578

CLASS 179
1SB 3,737,580
6.3R 3,737,576
15AD 3,737,585
15AQ 3,737,586
15BP 3,737,584
15BT 3,737,581
18GF 3,737,588
18B 3,737,587
100.2C 3,737,582
3,737,583
100.3A 3,737,589

CLASS 180
5A 3,737,001
43B 3,737,000
69R 3,737,002
78 3,737,003

CLASS 181
33HC 3,737,005

CLASS 182
112 3,737,006
210 3,737,007

CLASS 184
6.14 3,737,008

CLASS 187
17 3,737,009

CLASS 188
32 3,737,010
196BA 3,737,011
202 3,737,012

CLASS 190
43 3,737,013

CLASS 191
45R 3,737,590

CLASS 192
30R 3,737,014
45 3,737,015
53F 3,737,016

CLASS 194
13 3,737,017

CLASS 195
9 3,737,374
36P 3,737,375
62 3,737,383
63 3,737,376
66R 3,737,377

CLASS 197
64 3,737,018

CLASS 198
20R 3,737,021
21 3,737,019
22R 3,737,020
127R 3,737,022
175 3,737,023
181 3,737,024
229 3,737,025

CLASS 200
11D 3,737,593
16R 3,737,594
33R 3,737,595
34 3,737,596
38BA 3,737,597
38R 3,737,598
51.14 3,737,592
61.39 3,737,600
61.45R 3,737,599
61.93 3,737,591
76 3,737,601
82D 3,737,602
3,737,603
153LB 3,737,604
168G 3,737,605
169PB 3,737,606
172A 3,737,607

CLASS 203
89 3,737,378

CLASS 204
1T 3,737,379
15 3,737,380
263 3,737,381

CLASS 206
42 3,737,026
47A 3,737,027
52R 3,737,028
56AB 3,737,029
59E 3,737,030
65F 3,737,031

CLASS 209
10 3,737,032
74R 3,737,033
84 3,737,034
380 3,737,035

CLASS 210
12 3,737,382
59 3,737,384
70 3,737,036
73 3,737,037
78 3,737,038
80 3,737,039
206 3,737,040
228 3,737,041
321 3,737,042
3,737,043
490 3,737,045
501 3,737,044

CLASS 211
10 3,737,046
162 3,737,047
182 3,737,048

CLASS 212
35R 3,737,049

CLASS 214
1BD 3,737,050
6DK 3,737,052
3,737,053
6S 3,737,051
16.1A 3,737,057
16.4A 3,737,056
17D 3,737,054
42R Re.27,657
77P 3,737,055
85 3,737,058
145 3,737,059
177F 3,737,505
512 3,737,061
514 3,737,060
670 3,737,062

CLASS 215
9 3,737,063
42 3,737,064

CLASS 219
10.41 3,737,609
10.55 3,737,608
10.67 3,737,610
10.75 3,737,611
10.79 3,737,612
3,737,613
60A 3,737,614
69C 3,737,615
76 3,737,616
156 3,737,618
3,737,619
211 3,737,620
318 3,737,621
360 3,737,626
364 3,737,622
441 3,737,623
521 3,737,627
525 3,737,624
553 3,737,625

CLASS 220
2.1A 3,737,065
31S 3,737,066
60R 3,737,067
60 3,737,068
94R 3,737,069

CLASS 221
6 3,737,070
129 3,737,071
203 3,737,072

CLASS 222
134 3,737,073
142.9 3,737,075
146H 3,737,076
153 3,737,077
192 3,737,078
193 3,737,074

CLASS 223
68 3,737,079
70 3,737,080
84 3,737,081

CLASS 224
4E 3,737,082
42.1H 3,737,083

CLASS 225
97 3,737,084

CLASS 226
11 3,737,085
3,737,086
110 3,737,087
119 3,737,088
156 3,737,089
187 3,737,090
193 3,737,091

CLASS 229
14B 3,737,092
14R 3,737,093
34R 3,737,094
51TC 3,737,095

CLASS 233
19A 3,737,096

CLASS 234
114 3,737,097

CLASS 235
61.1E 3,737,629
61.11E 3,737,632
61.5E 3,737,630
61.6E 3,737,628
61.6R 3,737,631
92PL 3,737,633
103 3,737,634
150.26 3,737,635
152 3,737,636
153A 3,737,637
164 3,737,638
186 3,737,639
194 3,737,686
195 3,737,640
197 3,737,641
3,737,642

CLASS 236
87 3,737,098

CLASS 239
15 3,737,099
89 3,737,100
225 3,737,101
265.15 3,737,102
265.23 3,737,103
274 3,737,104
423 3,737,105
518 3,737,106
588 3,737,107
598 3,737,108

CLASS 240
1.3 3,737,643
2S 3,737,655
2.1 3,737,644
2.18 3,737,687
3 3,737,645
4.2 3,737,646
6.4W 3,737,647
6.42 3,737,649
7.5 3,737,651
10.6R 3,737,648
10.66 3,737,650
11 3,737,652
15 3,737,844
41.3 3,737,653
52R 3,737,654
151 3,737,656

CLASS 241
37 3,737,109
43 3,737,110
282.2 3,737,111

CLASS 242
47.01 3,737,112
56.1 3,737,116
67.1 3,737,113
75.1 3,737,115
79 3,737,114

CLASS 244
1SA 3,737,118
1SD 3,737,117
1N 3,737,119
3.17 3,737,120
3.21 3,737,122
13 3,737,121
110A 3,737,123
3,737,124
135B 3,737,125
151B 3,737,126

CLASS 246
392 3,737,657
448 3,737,658

CLASS 248
48.2 3,737,127
71 3,737,128
97 3,737,129
181 3,737,130
223 3,737,131
228 3,737,132
313 3,737,133
354R 3,737,134
361R 3,737,135
412 3,737,136
441 3,737,137

CLASS 249
14 3,737,266
197 3,737,138

CLASS 250
49.5A 3,737,659
49.5E 3,737,617
50 3,737,660
65R 3,737,661
65T 3,737,662
83.3UV 3,737,685
83.3H 3,737,663
213R 3,737,667
214R 3,737,664
219DF 3,737,665
220R 3,737,668
223R 3,737,666
231R 3,737,669

CLASS 251
1 3,737,139
14 3,737,140
28 3,737,143
58 3,737,142
129 3,737,141
307 3,737,144
309 3,737,145

CLASS 252
102 3,737,385
162 3,737,386
170 3,737,387
171 3,737,388
3,737,389
3,737,390
182 3,737,391
364 3,737,392
431R 3,737,393
435 3,737,394
447 3,737,395
466J 3,737,396

CLASS 254
108 3,737,146
3,737,147

CLASS 259
4 3,737,148
146 3,737,149
191 3,737,150
3,737,151

CLASS 260
2.5AJ 3,737,397
3,737,400
2.5F 3,737,398
2.5L 3,737,399
23R 3,737,401
27R 3,737,485
29.2TN 3,737,402
32.8R 3,737,440
37EP 3,737,403
39R 3,737,404
40R 3,737,405
47CP 3,737,408
47EP 3,737,406
47UA 3,737,407
49 3,737,409
59 3,737,410
63R 3,737,411
67.5 3,737,412
77.5C 3,737,413
3,737,414
78UA 3,737,478
79 3,737,415
82.1 3,737,416
84.1 3,737,417
85.5R 3,737,420
88.2D 3,737,418
88.3 3,737,419
94.2M 3,737,421
112.5 3,737,422
3,737,423
204 3,737,424
210R 3,737,425
3,737,426
239.3R 3,737,428
240D 3,737,429
240G 3,737,430
247.1 3,737,431
248NS 3,737,432
256 3,737,433
302F 3,737,434
307A 3,737,435
308D 3,737,436
314.5 3,737,437
326S 3,737,438
326.3 3,737,439
346.1R 3,737,441
397.3 3,737,427
399 3,737,442
404.5 3,737,443
419 3,737,444
453PC 3,737,445
453R 3,737,446
456R 3,737,447
464 3,737,448
465D 3,737,449
468H 3,737,450
469 3,737,451
486R 3,737,452
501.17 3,737,453
518R 3,737,454
520 3,737,455
543P 3,737,456
545R 3,737,457
570R 3,737,458
577 3,737,459
583EE 3,737,461
583M 3,737,460
583P 3,737,462
587 3,737,463
615.5 3,737,464
619A 3,737,465
621R 3,737,466
631.5 3,737,467
648C 3,737,468
650R 3,737,469
653 3,737,470
653.3 3,737,471
668F 3,737,472
680E 3,737,473
683.15D 3,737,474
3,737,475
3,737,476
3,737,477
824R 3,737,479
864 3,737,480
865 3,737,481
876B 3,737,482
878R 3,737,483
880B 3,737,484
930 3,737,486
973 3,737,487

CLASS 264
26 3,737,488
30 3,737,489
40 3,737,490
42 3,737,493
43 3,737,491
3,737,492
3,737,494
89 3,737,496
92 3,737,498
3,737,497
94 3,737,495
95 3,737,499
134 3,737,500
142 3,737,501
159 3,737,502
161 3,737,503
167 3,737,504
168 3,737,506
176F 3,737,507
182 3,737,508
204 3,737,509
212 3,737,510
234 3,737,511
256 3,737,512
297

CLASS 266
39 3,737,153

CLASS 267
136 3,737,155
153 3,737,154
154 3,737,156

CLASS 269
31 3,737,157

CLASS 271
10 3,737,158
57 3,737,159
64 3,737,160

CLASS 272
56.5 3,736,847
60 3,737,161
68 3,737,162
69 3,737,163

CLASS 273
98 3,737,164
102.2S 3,737,166
102.4 3,737,165
134C 3,737,167
156 3,737,168

CLASS 277
235B 3,737,169

CLASS 279
60 3,737,170

CLASS 280
11.37K 3,737,171
22 3,737,172
104.5R 3,737,173

124B 3,737,174
150B 3,737,175
154.5R 3,737,176
495 3,737,177

CLASS 281

42 3,737,178

CLASS 285

96 3,737,179
197 3,737,180
316 3,737,181

CLASS 287

86 3,737,182

CLASS 292

7 3,737,183
170 3,737,184
308 3,737,185
338 3,737,186

CLASS 294

19R 3,737,187
27R 3,737,188
86.34 3,737,189

CLASS 296

23A 3,737,190
27 3,737,191
28C 3,737,192
84K 3,737,193
137E 3,737,194

CLASS 297

142 3,737,195
181 3,737,196
385 3,737,197
450 3,737,198

CLASS 299

89 3,737,199

CLASS 303

21A 3,737,201
21F 3,737,200

CLASS 307

116 3,737,670
126 3,737,671
130 3,737,761
202 3,737,672
204 3,737,674
205 3,737,673
211 3,737,675
220 3,737,676
234 3,737,677
237 3,737,678
246 3,737,681
252J 3,737,679
257 3,737,680
291 3,737,682
293 3,737,683
308 3,737,684

CLASS 308

10 Re.27,660
183 3,737,202
200 3,737,203
207A 3,737,205
241 3,737,204

CLASS 310

2 3,737,688
3R 3,737,689
8.2 3,737,690
8.7 3,737,691
15 3,737,692
67 3,737,693
74 3,737,694
162 3,737,695
168 3,737,696
207 3,737,697

CLASS 312

7TV 3,737,206
246 3,737,207
40 3,737,208
247 3,737,209

CLASS 313

60 3,737,698
3,737,699
65R 3,737,700
66 3,737,701
3,737,702
85S 3,737,703
108D 3,737,704
108R 3,737,705
109.5 3,737,706
3,737,707
120 3,737,708
174 3,737,709
3,737,710
277 3,737,711
325 3,737,712
337 3,737,714

CLASS 315

3.5 3,737,713
12 3,737,715
13C 3,737,716
58 3,737,718
75 3,737,717
91 3,737,719
3,737,720
151 3,737,721
209 3,737,722

CLASS 317

11A 3,737,724
16 3,737,725
18D 3,737,726
33R 3,737,744
40A 3,737,727
100 3,737,728
101DH 3,737,729
101R 3,737,730
134 3,737,733
141S 3,737,732
3,737,734
148.5B 3,737,735
154 3,737,736
213 3,737,723
234R 3,737,737
3,737,738
235R 3,737,740
3,737,741
3,737,742
3,737,743
235 3,737,739

CLASS 318

52 3,737,745
130 3,737,746
178 3,737,747
331 3,737,748
443 3,737,750
463 3,737,751
471 3,737,752
472 3,737,749
602 3,737,753

CLASS 320

1 3,737,754

CLASS 321

2 3,737,755
3,737,756
11 3,737,757
3,737,763
18 3,737,758
45C 3,737,759

CLASS 322

28 3,737,760

CLASS 324

3 3,737,768
32 3,737,762
40 3,737,764
51 3,737,765
3,737,767
54 3,737,769
57R 3,737,766
58.5C 3,737,770
83A 3,737,771
154 3,737,772
166 3,737,773

CLASS 325

2 3,737,774
37 3,737,775
38B 3,737,780
40 3,737,776
148 3,737,777
322 3,737,778
324 3,737,779
363 3,737,781
3,737,782
367 3,737,783
436 3,737,784
442 3,737,785
466 3,737,786
470 3,737,787

CLASS 328

118 3,737,788
138 3,737,789
165 3,737,790
167 3,737,791

CLASS 329

103 3,737,792

CLASS 330

9 3,737,794
11 3,737,793
29 3,737,795
3,737,796
30D 3,737,797
85 3,737,798
126 3,737,799
207P 3,737,800

CLASS 331

53 3,737,801
96 3,737,802
107R 3,737,803
3,737,804
111 3,737,731
116R 3,737,805
417R 3,737,806

CLASS 332

16T 3,737,807
31R 3,737,809

CLASS 333

10 3,737,810
20 3,737,808
30R 3,737,811
32 3,737,812
70R 3,737,813
72 3,737,814
73R 3,737,815
73W 3,737,816

CLASS 334

7 3,737,817
11 3,737,818

CLASS 335

16 3,737,819
65 3,737,820
133 3,737,821
304 3,737,822

CLASS 336

96 3,737,823
200 3,737,824

CLASS 337

91 3,737,825
395 3,737,826

CLASS 338

2 3,737,827
12 Re.27,661
18 3,737,828
32R 3,737,829
128 3,737,830
261 3,737,831

CLASS 339

14R 3,737,832
17F 3,737,833
21R 3,737,834
45R 3,737,835
64R 3,737,836
127 3,737,837
186M 3,737,838
272R 3,737,839
273F 3,737,840

CLASS 340

2 3,737,841
4R 3,737,842
18NC 3,737,843
18P 3,737,845
27AT 3,737,846
35 3,737,847
52D 3,737,848
52E 3,737,849
3,737,850
104R 3,737,851
146.1F 3,737,853
146.3AG 3,737,854
3,737,855
146.3Q 3,737,852
3,737,856
148R 3,737,857
151 3,737,858
163R 3,737,862
166R 3,737,859
172.5 3,737,860
3,737,861
3,737,863
3,737,864
3,737,865
3,737,866
3,737,867
3,737,868
3,737,869
3,737,870
3,737,871
3,737,872
3,737,873
173CR 3,737,876
173LM 3,737,875
3,737,878
173LT 3,737,877
173SP 3,737,874
173R 3,737,879
174TF 3,737,881
3,737,882
174.1C 3,737,883
174.1E 3,737,880
174.1H 3,737,896
174.1R 3,737,884
198 3,737,885
244R 3,737,886
248E 3,737,887
267R 3,737,888
323 3,737,889
347AD 3,737,894
3,737,897
347CC 3,737,891
347DD 3,737,890
3,737,895
347NT 3,737,892
3,737,893
381R 3,737,898

CLASS 343

5R 3,737,899
6.5SS 3,737,911
7A 3,737,900
7.5 3,737,901
9 3,737,902
18A 3,737,903
18B 3,737,904
100ME 3,737,905
705 3,737,906
744 3,737,907
754 3,737,908
755 3,737,909
880 3,737,912
895 3,737,910

CLASS 346

34 3,737,913
75 3,737,914
79 3,737,915

CLASS 350

160R 3,737,211
166 3,737,210
174 3,737,212
214 3,737,213
3,737,214
215 3,737,215
306 3,737,216

CLASS 351

23 3,737,217

CLASS 352

78R 3,737,218
129 3,737,219
159 3,737,220

CLASS 355

3 3,737,221
3,737,222
32 3,737,224
48 3,737,225
67 3,737,226
74 3,737,227
78 3,737,228
3,737,229
111 3,737,230

CLASS 356

5 3,737,231
18 3,737,232
28 3,737,233
88 3,737,234
114 3,737,235
118 3,737,236
161 3,737,237
172 3,737,238
177 3,737,239
227 3,737,240

CLASS 401

59 3,737,241
157 3,737,242

CLASS 404

117 3,737,244
122 3,737,243

CLASS 408

225 3,737,245

CLASS 415

1 3,737,246
195 3,737,247
198 3,737,248

CLASS 416

179 3,737,249
219 3,737,250

CLASS 417

12 3,737,251
53 3,737,252
241 3,737,253
403 3,737,254
424 3,737,255
477 3,737,256
3,737,257
499 3,737,258

CLASS 423

8 3,737,513
121 3,737,514
212 3,737,515
308 3,737,516
560 3,737,517
587 3,737,518
589 3,737,519
598 3,737,520

CLASS 424

22 3,737,521
49 3,737,522
122 3,737,523
180 3,737,524
3,737,525
181 3,737,526
200 3,737,527
203 3,737,528
209 3,737,529
210 3,737,530
222 3,737,532
226 3,737,533
229 3,737,534
243 3,737,535
246 3,737,536
247 3,737,537
248 3,737,538
3,737,539
250 3,737,540
251 3,737,541
263 3,737,531
3,737,542
3,737,544
267 3,737,543
271 3,737,545
273 3,737,546
3,737,547
3,737,548
274 3,737,549
279 3,737,550
286 3,737,551
313 3,737,552

CLASS 425

112 3,737,259
113 3,737,260
3,737,261
3,737,262
131 3,737,263
134 3,737,264
140 3,737,265
154 3,737,267
192 3,737,268
196 3,737,269
242 3,737,270
247 3,737,271
248 3,737,272
326 3,737,273
364 3,737,274
387B 3,737,275
388 3,737,276
438 3,737,277
450 3,737,278

CLASS 431

158 3,737,279
352 3,737,281

CLASS 432

6 3,737,282
41 3,737,280
58 3,737,283

CLASSIFICATION OF DESIGNS

D 2— 233 227,046
227,047
276 227,160
278 227,048
317 227,049
D 6— 20 227,050
227,051
227,052
26 227,053
30 227,057
66 227,054
73 227,055
227,056
149 227,058
159 227,059
160 227,060
161 227,061
162 227,062
227,063
184 227,064
227,065
227,066
186 227,067
190 227,068
194 227,069
D 8— 99 227,071
166 227,072
227,073
227,074
236 227,075
243 227,194
D 9— 12 227,076
28 227,077
40 227,078
170 227,079
186 227,080
191 227,081
194 227,082
219 227,083
242 227,084
258 227,085
D13— 1 227,086
227,087
227,088
D14— 3 227,089
227,090
227,091
6 227,092
6 227,093
234 227,070
D16— 2 227,095
D22— 4 227,096
5 227,097
227,098
13 227,099
D23— 55 227,100
227,101
57 227,102
58 227,103
D24— 1 227,104
227,105
227,106
227,107
D25— 227,108
227,109
227,110
227,111
D26— 227,112
5 227,113
227,114
227,115
14 227,116
227,117
227,118
18 227,094
227,119
227,120
227,121
227,122
15 227,123
D29— 19 227,124
227,125
D30— 1 227,126
D34— 4 227,127
15 227,128
227,129
227,130
D44— 1 227,131
227,132
9 227,133
227,134
227,135
227,136
10 227,137
227,138
227,139
15 227,140
227,141
21 227,142
26 227,143
29 227,144
D45— 17 227,145
D48— 27 227,146
D49— 1 227,147
29 227,148
32 227,149
D52— 4 227,150
6 227,151
D54— 12 227,152
227,153
227,154
D55— 1 227,155
227,156
D56— 227,157
4 227,158
227,159
D57— 1 227,161
227,162
227,163
227,164
D59— 2 227,165
D60— 1 227,166
D64— 11 227,167
D65— 1 227,168
D70— 227,169
227,170
D71— 227,171
D72— 227,172
227,173
227,174
D74— 227,175
5 227,176
D77— 1 227,177
D81— 10 227,178
227,179
D83— 1 227,180
227,181
227,182
227,183
227,184
D85— 2 227,185
D86— 10 227,186
227,187
227,188
227,189
D87— 1 227,190
227,191
8 227,192
D90— 9 227,193
D97— 1 227,195

CLASSIFICATION OF PLANTS

P. — 20 3,351	P. — 41 3,350	P. — 57 3,352	P. — 79 3,353	P. — 80 3,354	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,736,661	3,736,958	3,737,621	3,736,796	3,736,663	3,737,359
3,737,066	3,736,996	3,737,634	3,736,945	3,736,664	3,737,422
3,737,117	3,737,005	3,737,639	3,737,017	3,736,675	3,737,426
3,737,237	3,737,010	3,737,649	3,737,249	3,736,678	3,737,430
3,737,348	3,737,013	3,737,666	3,737,250	3,736,680	3,737,435
3,737,558	3,737,022	3,737,674	3,737,361	3,736,690	3,737,465
4 : 3,736,860	3,737,031	3,737,675	3,737,418	3,736,697	3,737,468
3,736,990	3,737,033	3,737,676	3,737,440	3,736,703	3,737,487
3,737,009	3,737,038	3,737,679	3,737,456	3,736,727	3,737,493
3,737,281	3,737,055	3,737,687	3,737,485	3,736,731	3,737,511
3,737,496	3,737,057	3,737,711	3,737,494	3,736,732	3,737,517
3,737,704	3,737,059	3,737,722	3,737,551	3,736,736	3,737,526
3,737,773	3,737,077	3,737,729	3,737,624	3,736,787	3,737,549
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5 : 3,736,600	3,737,103	3,737,766	3,737,746	3,736,846	3,737,562
6 : Re.27,660	3,737,120	3,737,771	3,737,765	3,736,917	3,737,565
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3,736,623	3,737,161	3,737,789	3,737,298	3,736,986	3,737,586
3,736,650	3,737,181	3,737,792	3,737,391	3,736,987	3,737,594
3,736,672	3,737,184	3,737,801	3,737,516	3,736,988	3,737,671
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3,736,687	3,737,202	3,737,807	11 : 3,736,708	3,737,003	3,737,699
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3,736,745	3,737,325	3,737,864	3,736,992	3,737,075	3,737,793
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3,736,793	3,737,407	3,737,880	3,737,287	3,737,127	3,737,890
3,736,810	3,737,442	3,737,883	3,737,453	3,737,129	18 : Re.27,659
3,736,831	3,737,450	3,737,896	3,737,601	3,737,131	3,736,644
3,736,865	3,737,452	3,737,900	3,737,820	3,737,140	3,736,719
3,736,874	3,737,459	3,737,904	3,737,846	3,737,157	3,736,766
3,736,880	3,737,500	3,737,908	3,737,893	3,737,165	3,736,870
3,736,905	3,737,514	8 : 3,737,587	3,737,909	3,737,185	3,736,876
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3,737,147
3,737,204
3,737,226
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3,737,382
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3,737,408
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3,736,773
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22 : 3,737,163
3,737,189
3,737,513
24 : 3,736,630
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3,737,118
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25 : Re.27,658
3,736,632
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27 : Re.27,661
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3,736,625
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3,737,379
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3,737,719
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39 : Re.27,655
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3,736,634
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3,737,154
3,737,167
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3,737,203
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3,737,275
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3,737,307
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3,737,405
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3,737,808
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3,736,763
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3,737,136
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3,737,178
3,737,199
3,737,208
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3,737,301
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3,737,592

44 : 3,736,620
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46 : 3,736,734
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3,737,794
48 : 3,736,607
3,736,692
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3,736,830
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3,736,888
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3,736,982
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3,736,984
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3,737,142
3,737,160
3,737,168
3,737,179
3,737,180
3,737,190
3,737,414
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3,737,576
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3,737,845
3,737,857
3,737,913
49 : 3,736,677
3,736,720
3,736,832
3,736,877
3,736,976
3,737,068
3,737,381
3,737,803
3,737,863
50 : 3,736,740
51 : 3,736,786
3,736,839
3,737,392
3,737,505
3,737,508
3,737,787
3,737,790
3,737,810
3,737,851
52 : 3,737,375
53 : Re.27,656
3,736,652
3,736,798
3,736,816
3,736,970
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3,737,628
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54 : 3,736,713
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3,737,389
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55 : 3,736,655
3,736,674
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3,736,784
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3,736,812
3,736,840
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3,736,847
3,736,901
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3,737,043
3,737,090
3,737,095
3,737,197
3,737,328
3,737,376
3,737,692
3,737,822

DESIGN PATENTS

1 : 227,112
6 : 227,049
227,073
227,074
227,100
227,114
227,123
227,124
227,126
227,129
227,136
227,144
227,145
227,177
227,189
227,195
8 : 227,096
227,160
9 : 227,060
227,185
227,187
12 : 227,064
227,066
227,127
227,183
16 : 227,174
17 : 227,058
227,061
227,076
227,083
227,094
227,099
227,108
227,132
227,137
227,139
227,143
227,170
227,172
227,179
227,182
227,190
227,191
18 : 227,055
227,056
227,178
227,192
20 : 227,068
21 : 227,193
25 : 227,072
227,080
227,085
227,088
227,135
227,163
227,164
26 : 227,057
227,078
227,093
227,155
227,181
27 : 227,142
29 : 227,092
227,098
34 : 227,081
227,104
227,107
227,184
36 : 227,048
227,051
227,059
227,063
227,070
227,077
227,079
227,082
227,119
227,121
227,122
227,125
227,131
227,133
227,134
227,138
227,141
227,149
227,152
227,154
227,168
39 : 227,046
227,047
227,095
227,105
227,115
227,150
227,166
227,167
41 : 227,109
227,111
227,194
42 : 227,062
227,069
227,091
227,102
227,106
227,130
227,148
227,157
227,165
44 : 227,161
227,162
227,180
46 : 227,188
48 : 227,067
227,097
51 : 227,113
53 : 227,110
55 : 227,089
227,103
227,140
227,153
227,156

PLANT PATENTS

6 : 3,350
3,352
39 : 3,353
3,354

Design Patents

Plant Patents

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

PATENT OFFICE
Robert Gottschalk, Commissioner